NATURE MAGAZINE

AUGUST 1931 35¢ VOL. 18, NO. 2

Now Available

NEW

CLOTH BOUND—SECOND EDITION

BIRD and ANIMAL PAINTINGS

by R. BRUCE HORSFALL

The first edition of 22,000 paper bound books was promptly bought up and the demands of Nature Lovers for a more permanent binding resulted in the substantial cloth Bound Edition.

This page shows the actual size of the Book. The pictures, size 2½ x 3½, shown here in black and white, are reproduced in full color. The Book also has a full page frontispiece of The American Eagle.

Each picture is accompanied by a concise description of the character and habits of the subject.

THE BOOK WILL PROVE OF VALUE TO PARENTS and CHILDREN, to TEACHERS, NATURE COUNCILORS, STUDENTS, SCHOOLS and LIBRARIES.

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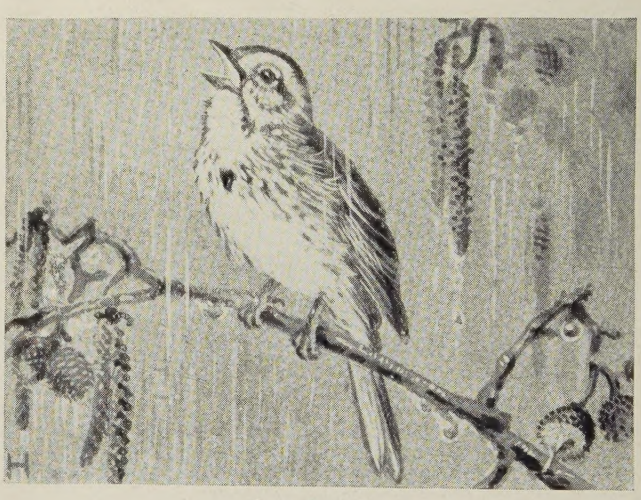

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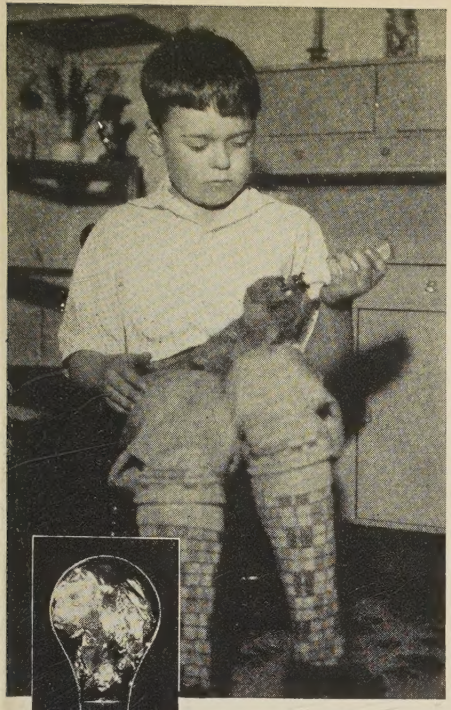

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anytime, anywhere . . This new lamp makes it easy

NOW you can take unusual, prize-winning snapshots—indoors or outdoors at night—of people, of pets, wild animals and birds and of hundreds of heretofore difficult subjects, easily . . . with the aid of the new G. E. MAZDA Photoflash lamp.

This handy new light source is simple to use. Any electric current—from flashlight battery, storage battery or house current—operates it without noise, smoke, odor or dust. A swift, brilliant flash, so quick that subjects do not even twitch an eyelash, and the picture is yours. A new picture calls for a new lamp.

Enjoy your camera 24 hours a day now. Go to the store where you usually buy film, today, and get some G. E. MAZDA Photoflash lamps. Once you have seen the prints of your first Photoflash pictures, you will want to take lamps and film with you on your vacation, as well as to have them on hand at home, ready for photographs.

To be sure of General Electric quality when buying Photoflash lamps, always look for the G. E. in a circle and the words "Photoflash Lamp" on the disc within the bulb. Write for your copy of an interesting booklet on this new invention. Address: National Lamp Works of General Electric Company, Nela Park, Cleveland, Ohio.

This shows how to use G. E. MAZDA Photoflash lamps. For best results flash them in a reflector. It may be had at a low price—complete with flashlight battery or wired for other electric current.

GENERAL ELECTRIC
MAZDA PHOTOFLASH LAMPS

" . . . Do not shoot at hawks . . . "

Bird Boy of the Ozarks

by Effie Sterett Ruhl

Guy Greenwell, of Joplin, Missouri, is a boy thirteen years old. Yet he has the unusual distinction of lecturing before large audiences, speaking over the radio, and acting as instructor in summer camps both for Y. M. C. A. and Boy Scout Conferences. This has all come about not because Guy is a prodigy, but because he has pursued a Nature hobby for a number of years, and has become well versed in the ways of birds and animals. He has appeared many times before large groups and never fails to amaze his hearers with his profound knowledge and the range of his observation.

The boy's father, Kelly Greenwell, has conducted a large poultry business in Joplin for many years, and Guy grew up among the chickens, ducks, geese and turkeys, so that it is natural that he should be familiar with fowl. Pictures of birds and animals early attracted him and his first readings dealt with stories of Nature. His father, a member of the Izaak Walton League, fostered Guy's enthusiasm, and when he went to the National Convention of the League in St. Louis in 1927 as a delegate, he took Guy, then nine. Guy was asked to speak on bird life to the sixteen hundred delegates gathered there, and deeply impressed his hearers with his fund of knowledge.

Guy and his father are pals, and no little credit for the boy's remarkable achievement is due the father and mother who have always provided the best literature for his study. The finest Nature and sport magazines, the pamphlets from both state and national agricultural departments, and the best books procurable on birds and animals have always been within the boy's reach. Yet knowledge has never been forced on him. On the contrary, his parents too often have to call, "Guy, put out your light and go to sleep", when the new issues appear.

Guy does not depend wholly upon reading for his information. He spends long hours alone in field and wood. He delights to lie at ease under a tree and watch the birds winging through the air or chattering or singing as they build their nests. He

(Continued on page 71)

Filmo 70-D, "Master of all personal movie cameras." Seven film speeds, three-lens turret, variable viewfinder. $245 and up in Sesamee-locked case. Other Filmos from $92 up. Filmo Projectors, $198 and up.

What you see, you get, with Filmo

Filmo catches *the unusual movie*

● Wild things of the fields and forests wait for no camera, but Filmo is always *there*, and *ready*—for splendid, brilliant, motion pictures. The ease with which the Filmo Personal Movie Camera operates marks it as the nature-lover's own.

Wherever you find a lover of fine things, finely made, there will you find a Filmo enthusiast. For Filmo is a camera of jewel-like precision, of life-long dependability, made by Bell & Howell, makers for nearly a quarter of a century of the professional studio cameras used by the major film producers of the world.

Ask your dealer for a demonstration—particularly of the Kodacolor-equipped Filmo 75, at $149.50, the lowest priced Kodacolor-equipped movie camera on the market. Or write for booklet No. 27. Bell & Howell Co., 1813 Larchmont Ave. Chicago, Ill. New York, Hollywood, London, (B & H Co., Ltd.) Established 1907.

Filmo Cameras and Projectors use Eastman Safety Film (16 mm.) in the yellow box, obtainable everywhere. Filmo Cameras and Projectors may be equipped (under license) to use Kodacolor film for movies in full color.

BELL & HOWELL
FILMO

"Come Into the Garden, Maud"—With Your Camera

Don't let summer slip by without making a picture record of this year's garden. Are there not some particularly attractive blooms which will be good picture material? Perhaps you have some new garden furniture that adds to the attractiveness of things in general. Maybe the rockery or the bird bath is an addition this year or has not been photographed before.

A snap of mother or dad in the garden admiring the flowers are pictures worth having.

By chance you may catch one of the members of that bird family at home in the house Junior put up in the spring, and if you have a pool there are more chances awaiting. Little Betty launching a paper boat or Aunt Lolene examining a water-lily are two that will make pictorial subjects.

A portrait attachment is an inexpensive supplementary lens that slips over the regular camera lens and permits of making close-up pictures of flowers or other small objects—also head and shoulder portraits. The attachment may be used with box or collapsible type cameras.

A color filter will also help to get good recordings of color values of flowers and make the resulting pictures more suitable for tinting. Complete directions are furnished with such accessories which are quite simple to use.

Your collection of garden pictures should include long shots and medium distance shots and several close-ups. Provide a page or two in the album for the lot and neatly title them—using white ink on the dark album leaves. White ink for such purposes is obtainable at most any photographic, art supply or draughtsmen's materials store.

Some albums are now furnished with light gray leaves and for these ordinary ink will be quite satisfactory. Dates are important data in an album and make a series of pictures all the more interesting a few years hence.

The Editor Wants to Know

In planning editorial matter for the Photographic Department, the editor would appreciate word from readers as to particular subjects that interest them and that they would like discussed.

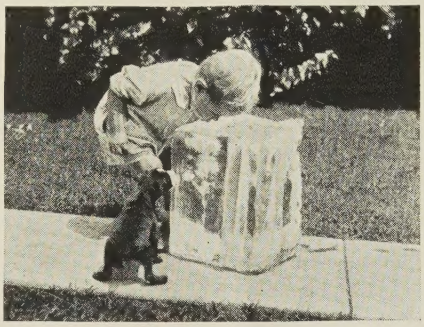
Would you, for example, like to see a column devoted to a glossary of photographic terms, words and phrases?

Again, how would you like a series of short, illustrated articles on the *history of photography?*

Would you be interested in seeing a selected picture reproduced and criticised each month—*helpful, constructive criticism?*

Drop us a line—we'll appreciate it and serve you better. Address—Editor Photographic Department, Nature Magazine, Washington, D. C.

EDITED BY ROBERT T. LOWELL



$500.00 PICTURE CONTEST CLOSES JULY 31

Perhaps if you hurry you will still have time to enter snapshots in Nature Magazine's Contest which closes July 31.

Pictures of any subject are eligible and the contest is strictly for amateurs. First prize is $100, second $75, third $50. There will be fifteen $10 awards, twenty-five $5 awards, and twenty-five *special* awards of one-year subscriptions to Nature Magazine. Winners of the special awards will have the privilege either of extending their subscription or of designating someone to whom the magazine shall be sent.

Hurry with your pictures. A last minute entry may win a big prize as *every* picture will be carefully considered. Winners will be announced as soon as possible.

"Never Again" Pictures

When you must take a picture of something which you may never again get a chance to "shoot", you will naturally want to be sure of securing a good negative. Here is a safeguard: make three negatives; give one the exposure you *think* correct, another one-third of this, and the other three times the exposure you think correct. One of the resulting negatives will surely yield a good print. *Be certain that you have turned the film each time.*

Newsy Notes

Literature On Request

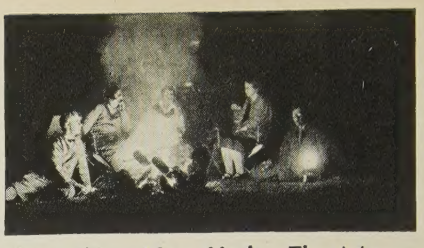
More proof is now offered of the stability of the Bell & Howell Filmo movie camera. H. Earl Hoover, a world traveler, has had a Filmo in steady use for over seven years and this camera, veteran of sea, air, mountain and desert, is said to run as smoothly as the day he got it.

The Ambro Corporation markets six models of movie projectors designed to give professional quality to the screen images of 16mm. amateur motion picture film. A model for every requirement is the claim. The new Victor Projector is also said to project an unusually clear, bright image.

Reflecting types of cameras have distinct advantages, especially to the nature photographer. All guess work in focusing, to get a sharp picture, is eliminated and the image may be viewed full picture size up to the instant of tripping the shutter. The Graflex and Rolleiflex are outstanding cameras of the reflecting type.

Color photography. The new Agfa color plates and the Finlay color plates are finding great favor with those who do color photography. Simplification of method and greater fidelity than ever to nature's colors is claimed for each. Great for colorful nature subjects.

Schools. Courses in photography in all its branches, both "still" and motion, is taught by well established schools in New York and Chicago. Booklets for the asking.



Something New Under The Moon

Circular On Request

Many unusual pictures may now easily be made after dark with the new Photoflash Lamp. The lamp resembles an ordinary household electric bulb and when screwed into a lamp socket or flashlight (such as dad may have around home or in the car) will make an intense, instantaneous light, that will record night pictures indoors or out. Naturally this new accessory is becoming intensely popular. There is no danger whatever, no flame, no smoke, or dust.

The writer has seen several interesting pictures made with the Photoflash Lamp; pictures that would have been practically impossible to obtain without it. A curly-headed little tot in a big bath-tub, two youngsters in their nighties going upstairs to bed, a young man smoking his pipe and tuning the radio to his favorite station, a girl watching the goldfish in an aquarium, a family group by the fireside, and an outdoor camp-fire scene. Doubtless there will be many taken around camp-fires this summer.

We now have some descriptive circulars about this latest invention for the amateur photographer—drop us a postcard if you would like one.

Ciné Hints

If you have just recently become a motion picture camera owner and enthusiast, these notes may prove interesting:

A telephoto lens is an especially valuable addition to the Nature picture seeker's equipment. It gives a big image of a distant or small object.

There are also wide angle lenses now available which take in a greater area when it is necessary to work in a confined space.

Care should be taken when moving the camera from one side to the other, to include a panorama, to do so slowly and evenly. It is well, however, not to try to get in "everything" in one section of film.

A filter over the camera lens and using Panchromatic Film will give beautiful pictorial results and will vividly record the clouds in the sky. The new super-sensitive "Pan" film permits of making pictures outdoors or indoors *at night* with but good ordinary incandescent illumination.

Unusual shots may be made from the running board of an automobile when going through a woodland road, etc., though the car should be going very slowly—five or ten miles an hour. Interesting movies may also be made through the windshield.

Then try a few shots sometime from a second story window of someone leaving the house, or youngsters playing on the lawn or of someone in the garden. And, too, you'll probably find Nature subjects for close-ups in your own garden.

Always hold the camera steady and keep the lens clean.

THE NAGEL VOLLENDA, a fine imported camera, is the ideal instrument for the naturalist. Its simplicity and quickness of operation assures ready action in game and bird photography; its accurate optical qualities yield unexcelled results. *One movement* opens and focuses the camera for infinity, *one movement* assures automatic return to infinity when the camera is closed, and *one movement* opens the camera book-like for film loading. It is provided with a precision focusing mechanism and is furnished with a brilliant view-finder and highly corrected Anastigmatic Lenses, yielding abundant luminosity under conditions of adverse light.

Picture Size, 2¼ x 3¼ inches

With f.6.3 Lens.....$16.50
" f.4.5 " 24.50

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Sample Contact Print or Positive sent on request

USE a Leica and experience a new thrill in photographing animals, birds, insects, plants, mineral specimens or any other subject. This marvelous camera, weighing fifteen ounces, is easy to carry and use and takes 36 pictures per roll of cinema film, double frame size. Equipped with a focal plane shutter permitting all speeds up to 1/500 of a second, Leica insures greater depth and more detail in pictures that enlarge beautifully, give perfect screen reproduction and are ideal for indexing purposes. $60 and up at better stores everywhere.

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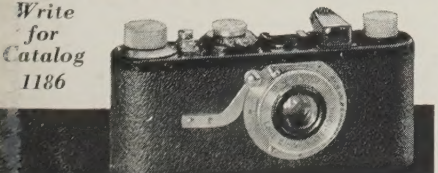

Bird Boy of the Ozarks

(Continued from page 69)

knows the shy little animals of the woods, and is as familiar with their habits as he is with birds. Most people are interested in birds and prefer to hear him talk on this subject; so most of his lectures are about his feathered friends.

His usual method of speaking is to ask the audience which bird it wishes that he discuss. Guy will then tell about its food, its size, color, habits, markings—in fact, everything that he has been able to learn about it. Other birds will be suggested, and these will be described in like manner. The listeners will ask questions so that the talk becomes very informal. Guy can answer ninety-eight percent of all questions asked at random by his hearers on the subject of his lecture. He can identify seven hundred and fifty birds and animals from pictures, and describe their habits.

Besides being asked repeatedly to appear on club programs, Guy has made weekly talks on Nature over the Joplin radio. He was also engaged as regular instructor during the summer of 1929, both at the Boy Scout Camp near Joplin and at the Y. M. C. A. Summer Conference near Hollister, Missouri. His name appeared on the regular printed programs with men of mature years who are leaders in their fields. He held the interest and attention of boys much older than himself who came to hear him day after day.

Guy is not a freak or a prodigy. He is just an average American boy with the likes and dislikes of the usual thirteen-year-old lad. He swims, plays ball, goes barefoot and enjoys life with other boys of his age. He is a good student in Junior High School and is especially strong in spelling, an achievement which has earned him the honor of representing his grade in the annual county contest. He has a splendid knowledge of geography because of his wide reading on the homes of birds and animals. His vocabulary is much larger than that of the average boy or girl of thirteen, since his reading of scientific literature has made him careful and exact.

Guy has a motley collection of several hundred fish, snakes, crayfish, mussels, snails and tadpoles which he keeps in a large tank near his home. About the lawn are a dozen bird houses which he built with his father's help in which the commoner birds of the Ozarks, the bluebirds, robins, chickadees, martins, swallows, wrens and sparrows find a happy home, close to this boy-naturalist whose future seems to hold so much, if judged from the past.

Learn Photography at HOME

Make money taking pictures. Prepare quickly during spare time. Also earn while you learn. No experience necessary. New easy method. Nothing else like it. Send at once for free book, *Opportunities in Modern Photography*, and full particulars.

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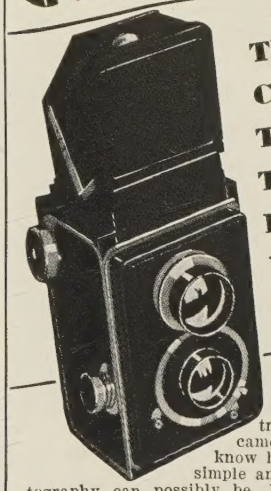

THE CAMERA THAT THINKS FOR YOU

If you haven't tried a Rolleiflex camera, you do not know how delightfully simple and alluring photography can possibly be. Rolleiflex is almost human in its fine perception of its owner's wishes. You see the image of the subject you are photographing in clear, distinct detail, right side up, even thruout the exposure. All you have to do is to focus by means of a thumb-wheel and when the image is sharp on the ground glass,—you shoot—with no misgivings that the resultant picture won't be equally sharp.

Rolleiflex is a camera of Reflex type, using standard roll-film exclusively, which by means of a specially patented device lies flat in the camera, yielding results equivalent to those obtained with plates. Operation of Rolleiflex is not only simple, but inexpensive as well.

Its optical equipment consists of the famous Zeiss Tessar Lenses.

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NATURE NEWS and VIEWS

The Ridgecrest Flower-Lady

Seven years ago Mabel Gower of Clayton, North Carolina, joined the force on the Southern Baptists' assembly grounds at Ridgecrest, North Carolina. The visitors of these Blue Ridge mountains soon dubbed her "flower-lady," for every dawn found her going forth into the great forests and coves gathering Nature's offerings, and returning to deck the lobby and halls with her treasures.

During these few summers, Miss Gower has located 675 different species of flowering plants growing among these North Carolina hills. Rare have been some of her discoveries. The Smithsonian Institution has identified over 200 of these varieties. In its museum today, one finds many of Miss Gower's contributions. One of these is an unusual form of *Solidago,* golden rod, never recognized before. Two other plants marked uncommon are *Coreopsis latifolia,* Michx, or broad leaf tickseed, found only in North Carolina and Tennessee, and *Broussonetia papyrifera vent,* the paper mulberry which was introduced from China and escaped from cultivation in the United States.

Many other interesting secrets of Nature's treasures are found in Miss Gower's collection, to which she continues to add new discoveries. Her hobby has led her deep into the realms of Nature.

English Roadsides

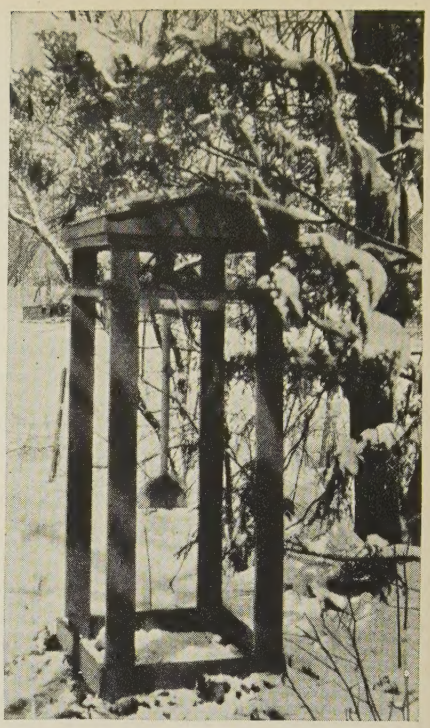
The Scapa Society, founded in England in 1893 "to protect the picturesque simplicity or rural and river scenery . . . with special reference to the abuses of spectacular advertising", reports that the British Isles also have their excrescences difficult to control along the beautiful highways. Under the law, local authorities may make by-laws restricting advertising, but frequently are lax in their duties, or fail to get the sanction of the Home Office in the proper manner. One of the greatest achievements has been an agreement between Shell-Mex, Ltd., the Anglo-American Oil Company, and the British Petroleum Company to withdraw signs in rural areas, except on garages and filling stations, and to erect no new signs on the sites. America can sympathize with England in the snail-like pace at which Progress seems to be gaited in the matter of billboard control.

Beautiful Forest Roads

The Forest Service has taken steps under the leadership of Chief Forester R. Y. Stuart to preserve the scenery along roads in the National Forests and to lay out future roads with an eye to the recreational and landscape possibilities. A new regulation reads in part: "The location of roads in national forests will no longer be viewed solely from the engineer's standpoint of speed and economy of construction, but recreational and scenic aspects will also be given the consideration due them." The regulation orders that the location of gravel pits and camps shall be made without impairing the aesthetic qualities of lands, and that a strip 400 feet wide will be reserved along Federal and State highways to be used only by permit. No advertising will be allowed on these strips, and no buildings that sacrifice public values or services. These regulations are important not only because they will govern hundreds of miles of road, but also because they will help to crystallize public policy in all the states.

Bird Contest Winners

When the Daughters of the American Revolution at Beaumont, Texas, sponsored a city-wide bird house contest last February, the Fletcher Elementary School submitted 86 houses, the makers of which and their products cover the school steps in the above picture. The year before, the school won first place for the greatest number of homes built; this year it was among the winners. The city first prize winner who got $10 for his efforts is the third boy from the bottom at the extreme right of the picture. One rule of the contest was that each house must be erected for use of the birds. Wren and martin houses were most popular, and feathered friends of these species need not complain of lodging facilities.



Protected Food Station

A food station that discourages cats, rats, squirrels and other animals that often steal food intended for birds is the achievement of Mathilde Schlegel of East Aurora, New York, and was exhibited not long ago at the National Flower Show in Buffalo. The roof is the top of a bee-hive, and set close under it is a feeding tray made of a cheese-box cover, with a rim to prevent nuts from rolling off. Ventilating holes in the roof served as entrances to wren houses during the summer months. This house was used by downy woodpeckers, nuthatches, and chickadees, but, curiously enough, was not patronized by sparrows or starlings to any extent.

Wilderness Areas Established

Sixteen tracts, designated as "primitive areas", and preserving conditions existing in the pioneer phase of California's development, have been set aside by the U. S. Forest Service in fifteen National Forests in the Sunshine State. They are part of the wilderness country of the Sierra and Coast Range, and except for trails and such roads as are necessary for fire protection, no permanent improvements will be permitted in them. These reservations are the answer to an insistent demand on the part of Nature lovers for untouched tracts in which the primeval conditions will not be destroyed by an encroaching civilization.

Forest Visitors Gain

Approximately one out of every four persons in the United States is estimated to have visited one of the 151 National Forests during 1931, according to R. Y. Stuart, Forest Service chief. More than 31,000,000 people used the reservations, his rangers report. California forests led the states, with 16,000,000 visitors. Campers and picnickers gained in number while guests of hotels and resorts showed a slight decrease. More than 29,000,000 entered the forests by automobile. The total gain over the preceding year was 146,000.

Tree Surgery by Bees

Are bees tree-surgeons as well as honey-makers? Miss Helen Miles of Salisbury, Connecticut, believes so, after seeing their work on a fallen tree-trunk which had broken off during a storm. The bees, which evidently had had a home in the tree, had filled several holes in the log with bees-wax. One patch was about eight inches wide and two feet long. Both ends of the log, which was about ten feet long and two feet in diameter, had been closed up with wax by the workers. Miss Miles believes that the bees, not wishing to desert their home after the fall of the tree, had decided to patch the remains and save their store of honey. The wax resembled cement and gave the impression of a most careful job of tree-surgery.

Old Firm Wins at Chelsea Show

Sutton and Son, Ltd., seedsmen to the King of England, and a century-old firm, captured the Horticultural Society of New York silver cup at the Chelsea, England, Flower Show. The award was made for the best exhibit. The winning firm showed only greenhouse plants grown from seed. Its victory is but another in a long string of successful exhibitions. It has earned in all more than 1,000 gold medals, and has repeatedly taken, in years past, the Sherwood Cup, which is the highest British award at the Chelsea Show.

A Sparrow Rescue

Out in the midst of traffic fluttered the wounded sparrow, its broken wing dragging. Cars whizzed by, each wheel a threat charged with death. Few of the motorists saw the bird, but finally one woman driver noticed the pathetic little creature and swung her machine to the curb to rescue it. Just as she was about to pick it up, however, recounts a news story in the *New Orleans States,* two other sparrows alighted one on each side of the injured bird and, catching its wings with their bills, dragged it to the sidewalk. Then, with the skill of human workmen lifting a heavy piece of furniture, the two rescuers hauled it over the curb and into a clump of bushes. We are indebted to Miss W. B. Conger of Newcomb College, New Orleans, for the clipping relating this incident of avian Good-Samaritanism.

Foolish Fish

The story of the pitcher that went to the well too often has its companion piece in a fish tale from Kenya Colony, British East Africa. Mr. J. K. Hill was fishing near Nairobi in the Malawa River with Captain Gibson and had the pleasure of watching the Captain hook a game fighter who used all the tricks of the trade to shake the fly from his mouth. Finally, the fish broke the line, taking the fly with him. Mr. Hill went on casting and a few moments later had a strike that nearly whipped the pole from his hands. After a furious struggle, he landed the fish—a rainbow just under two pounds in weight. Yes, you have guessed it—the rugged battler had the first fly in his mouth. He was one of those creatures that are brave, valorous and strong, but never learn by experience. His strength was his weakness.

WILLIAM L. FINLEY

NATURALIST

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"GETTING PERSONAL WITH MOUNTAIN LIONS"

THIS new lecture is the result of several expeditions made with Arthur Newton Pack, President of the American Nature Association, into little-known regions of Colorado, Utah, Arizona and New Mexico. Besides the remarkable pictures of the cougar, the pictures show a wide range of fascinating wild life in its native habitat—all taken during weeks of work by the Pack-Finley expeditions. The whole is a lecture one should not miss.

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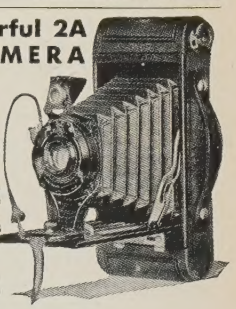

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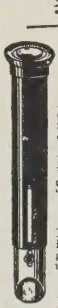

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See Page 70 for Photographic Contest

THINGS TO THINK ABOUT

A PAGE DEVOTED TO CONSERVATION FROM VARYING ANGLES

Billboard Findings

After more than three years of intermittent hearing of oral testimony, of study and investigation, the Master appointed by the Supreme Judicial Court of Massachusetts in the famous and important billboard case has made his report to the Court.

At the election in November, 1918, the people of Massachusetts voted more than two to one in favor of a Constitutional Amendment for the regulation of outdoor advertising. This was followed by enactment of legislation giving the Division of Highways in the Department of Public Works authority to control and restrict billboards. Various rules and regulations were promulgated from 1920 to 1925 until the rules established became so stringent as to bring injunction and suit from associated outdoor advertising interests. Since that last date the case has been in the courts.

During the period of the trial the law has been defended by the Attorney-General of Massachusetts aided by counsel for the Massachusetts Billboard Law Defense Committee. Against them has been arrayed the legal talent of the outdoor advertising industry.

In the findings now made public by the Master the public point of view gains much ground. The report clearly establishes that the Master regards billboards as exercising a distinct depreciating effect upon real estate values. It likewise recognizes the menace of billboards to safe traffic at intersections and on curves, and even points out that the billboard is not only such a menace due to obstruction but also due to distraction of attention.

On the subject of billboards in residential districts the Master says that "the introduction of signs and billboards into such a neighborhood tends seriously to injure and depreciate the value of property there located." As to signs in rural districts he states that "I am unable to find upon the evidence that they are less obnoxious than in a community of homes elsewhere."

"The heavy increase of swiftly moving traffic upon the highways," says the Master, on the point of safety, "and the steadily increasing number of fatal and other highway accidents, were matters of much concern to the Commission and were among their reasons for undertaking in 1923 the revision of the rules and regulations respecting outdoor advertising, in the interests of public safety. The records of the Division also tend to show that a large number of motor accidents upon the highways are due to inattention, and the records of certain insurance companies in evidence noted accidents as due to that cause."

The Master asserts that the rules devised with this in mind tend to promote public safety. He holds that the danger is greatest on the rural highway, particularly at intersections of highways or at railroad crossings and on curves.

Turning to the question of rural beauty and its value to the people as a whole, the Master points out that the Commission considered this in making its regulations. Considering the evidence, the Master declares that he finds that beauty as regarded by the Commission "has, in fact, a real and substantial economic value to the Commonwealth and to its citizens."

This voluminous report, with its many exhibits and its varied correlative evidence, has been submitted to the Supreme Court for its consideration. It is expected that, whatever the decision, the issue will be appealed to the Supreme Court of the United States. The Massachusetts case is, however, of outstanding importance in the whole fabric of legislation to restrict the billboard in the interests of the public welfare. Those who have labored in the interests of the people in this regard have done a public service of far-reaching importance.

The findings of the Master in the Massachusetts Billboard Case are by no means final. Further action before the Massachusetts Supreme Court pends, and appeal to the Supreme Court of the United States is likely. During the long period of argument on this case the Massachusetts Billboard Law Defense Committee has done yeoman service in the interests of all those who wish to see the natural beauty of the rural countryside of America preserved. This Committee needs funds to continue its work to a successful conclusion. These funds will be wisely and carefully spent. Contributions of any size will be appreciated by the Committee and should be sent to E. T. Hartman, Treasurer, State Street Trust Company, Boston, Massachusetts

Senate Wild Life Conservation

The need for conserving our rapidly vanishing wild life species, particularly those pursued as game, has long been evident, and yearly has been brought more and more forcibly to the attention of our legislators. Thousands of state and Federal laws for the protection of our wild life, some of great merit, have been enacted. But in the face of all these laws our game species, almost without exception, have rapidly diminished in numbers. Many factors—settlement, deforestation, pollution, fire, and the increase of hunters and fishemen, backed by improved machines for travelling and killing—have all contributed to this growing scarcity.

That part of the public interested in preservation has been little organized in comparison to those interested in destruction. In consequence remedial legislation has lagged far behind the needs of the decreasing remnant of useful wild life, and enforcement of the legislation still further.

But our legislators, becoming cognizant of the true situation, have sought organization within their own ranks, and one result is a special Senate Committee on Conservation of Wild Life Resources, directed to investigate conditions and recommend whatever legislation may be appropriate. The committee, headed by Senator F. C. Walcott, and including also Harry B. Hawes, Key Pittman, Charles L. McNary, and Peter Norbeck, has rendered its first report. Pertinent quotations follow:

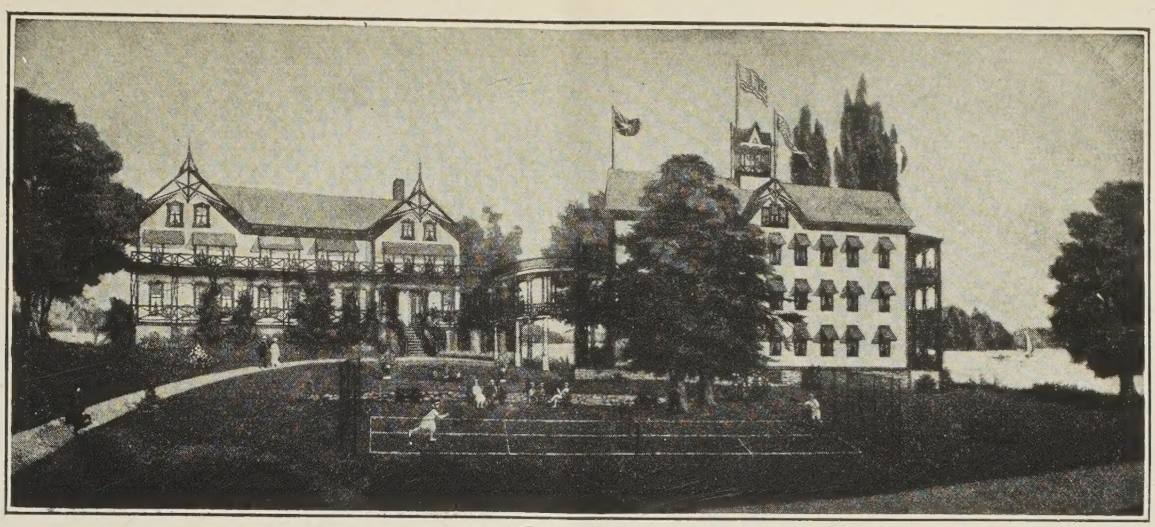
"The committee finds convincing evidence of a rapid disappearance of wild life." It finds also that "while there has been a steady decrease of game and game fish, there is a corresponding increase in the number of hunters and fishermen". These are estimated to number about thirteen million persons, who spend annually fully three quarters of a billion dollars.

"These estimates concern only those values realized in the pursuit of wild birds, animals, and fishes for food and sport. By far the greater proportion of Americans who annually go afield to enjoy our wildlife resources and the associations of out-of-doors, do not either shoot game or catch fish for sport. But all of them, nevertheless, are interested in wild life. Their numbers are annually increasing.**** It is impossible to estimate, even approximately, the tremendous sums annually invested and spent by this vast group of recreationists who are attracted by the ennobling and inspirational qualities associated with all varieties of wild creatures and their environment, but when figures are compiled they will dwarf any totals so far presented in connection with the activities of fishermen and hunters."

Thus, viewed solely from a commercial standpoint, the interests of those who "do not either shoot game or catch fish for sport" dwarf those of the destroyers.

The committee, while recognizing the value of efforts by the states, places on the Federal Government the responsibility of furnishing information that shall guide the states in their task. The Bureau of Biological Survey and the Bureau of Fisheries are named as the agencies that should perform these duties. It is made plain, however, that the appropriations now available are not sufficient to permit adequate performance of the duties already laid upon them, and the lack of co-operaton with the Federal Government on the part of many of the states is touched on.

The report here briefly reviewed is of a preliminary nature, and others are promised. These will be awaited with interest, and with the hope that the alarming conditions depicted will be bettered by the studies that are to follow.



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Homers and Their Care

Straight as a die fly homers from the ats of George Herman Ruth and "Hack" Wilson. Just as straight for the home loft y the homers released by enthusiastic igeon fanciers who make of their sport as ively a hobby as baseball fans do of theirs. o much popular interest has been evoked n homing pigeons of recent years that the J. S. Department of Agriculture has felt worth while to issue a brochure of the are and training of these birds. This is armers' Bulletin No. 1373, which describes election of stock, mating, methods of rooming the birds for racing and details f feeding, and which will be of value to oth amateurs and professionals. It has een prepared by Alfred R. Lee, Associate oultryman of the Animal Husbandry Di ision, who has also compiled an informa onal booklet on squab-raising as a busi ess, recently issued as Farmers' Bulletin Jo. 684.

Forestry Demonstration Contest

Aspiring young foresters will have an pportunity to show their prowess in a for stry demonstration contest to be held in Connecticut during the summer and fall, nd to receive one of several prizes as re ard for their work. The Connecticut For st and Park Association, together with the merican Forestry Association, the Con ecticut Forestry Department, and the Con ecticut Agricultural Experiment Service, are offering a bronze medal and cash prizes to those youths between ten and eighteen who show the greatest forest interest and ability. Each contestant must perform forestry work on a plot of land not less than one-half acre in size, and may elect either to thin sapling stands, to weed plantations, or to plant new stands as the form of work submitted. He is allowed to obtain the help of friends under eighteen years of age. A full report must be made at the end of the work to the Connecticut Forest and Park Association, 215 Church Street, New Haven, or other of the Connecticut sponsors of the contest.

Yosemite's Tall Trees

The tallest tree in Yosemite National Park is 300 feet high and is in Merced Grove, according to an official survey of the big trees in the popular California park. Mariposa Grove's tallest tree is the Clothespin, 293 feet in height. One of the queerest trees is the one in Merced Grove that began life on the edge of a stream, but so outgrew its environment that it has covered the center of the stream, part of which now passes under its base. A spring bubbles from under the center of another forest monarch, which apparently started as a seedling at the edge of the spring.

Nature Writer Promoted

Mrs. Elizabeth K. Peeples, formerly an associate of the department of Nature education in Nature Magazine and head of the Nature department of the District of Columbia schools, was recently made director of the District Community Centre Department. Previous to her appointment, she was administrative principal of the Brightwood School. Old readers of Nature Magazine will remember the delightful stories Mrs. Peeples contributed to the publication several years ago.

House for W-Rent

When Lieutenant Alice D. Agnew, Chief Nurse A. N. C., arrived at her new post at Fort Monroe, Virginia, one of her first unofficial acts was to place a small wren house on the corner of the porch of her quarters, in hopes that a family of wrens would be raised there. Her commanding officer, the Colonel, thought it a great joke, for he had been at the post for three years and nary a wren had he seen or heard. Every day he asked about it, and finally, tenants seeming to be slow in coming, he asked if he could put up a sign, "House for W-rent". So it was arranged that the Colonel should be the renting agent, with commissions and everything; but before he managed to get his sign in place, Lieutenant Agnew heard, one morning, a beautiful song which indicated that the home might be occupied. She investigated, and sure enough, there were a pair of wrens busily moving in their furniture. So she told the Colonel that as a real estate agent he was a failure, for the house was "w-rented" without his sign.

NATURE MAGAZINE

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To Stimulate Public Interest in Every Phase of Nature and the Out-Of-Doors, and Devoted to the Practical Conservation of the Great Natural Resources of America

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BEAUTY AND THE LAW

An Editorial

IT MAY seem to many that law, as exemplified by the decisions of the courts, stands still, often entangled by archaic precedents and statutes antiquated in the light of present-day progress. It is true that judicial rulings are rarely progressive and most frequently reflect public sentiment only after its affirmation has become incontestably strong. Legal opinion is today, in fact, in that state of flux with respect to one important item of our daily life—beauty.

There has been built up a considerable body of law and supporting judicial opinion against offenses to both the ear and the nose. The people can seek recourse against unseemly noise and against odorous enterprise. With these two human senses enjoying no small degree of protection, the people have come vociferously to demand similar treatment for the eye.

In the rush of our economic development we have inevitably outsped certain things of a gentler character that are, nevertheless, essential to a well-rounded existence. Our evolution as a nation has now reached the point where we can enjoy increasing leisure. In so doing we cannot help but look around to note some of the things we have let slip in the drive toward present-day standards of living. That these things are loosely classed under the general heading of "esthetic" is no reflection upon their worth. The eye, with its increasing free hours, demands its rights.

Symptomatic of this demand and symbolic of the tendency is the insistent call for restoration of our rural countryside to a state of beauty. Our new leisure is being spent much in the open, and that open, what with the billboard, filling station, hot dog pavillion and what not, leaves much to be desired. Naturally this situation has been translated into laws that endeavor to restrict such offenses against the eye. Equally naturally those individuals directly affected have sought recourse in the courts to protect rights which they regard as paramount to the rights of the majority.

We have had in recent months, however, two important judicial opinions which seem indubitably to reflect the public demand. The first was the decision of the Supreme Court of Indiana in upholding an ordinance of the City of Indianapolis which sought to prohibit billboards within five hundred feet of any park, parkway or boulevard. The court declared that "parks are usually laid out, ornamented and embellished in such a way as to afford pleasure to the eye as well as to furnish a place for the resort of the public for recreation and exercise, and it is only reasonable that the surroundings of a park should be kept in harmony therewith if practicable to do so." Thus did the Court place consideration of the esthetic from the visual point of view in the category of public welfare.

More recently we have the findings of the Master appointed by the Supreme Court of Massachusetts in the important and hotly contested billboard case in that State. This suit, brought by the outdoor advertisers against rules and regulations drawn by a State Commission pursuant to a vote of the people in favor of a constitutional amendment permitting such rules, has been in argument for several years. It is likely, in view of its fundamental importance, to go to the Supreme Court of the United States, whatever may be the decision of the Court on the findings of the Master.

Surveying the mass of evidence submitted, the Master found that, in addition to elements of danger through distraction and obstruction and adverse effect on property values, the billboard offended the esthetic sense. The findings sustained the Commission in basing a part of its rules on a desire to protect beauty, and declared that beauty "has, in fact, a real and substantial economic value to the Commonwealth, and to its citizens."

Here, then, we have two important rulings asserting the right of the public to enjoy beauty. These opinions are significant vanes indicating a prevailing wind of growing velocity. If those minority elements capitalizing on public expenditure and infringing upon public rights are wise they will seek a convenient storm cellar or build themselves a windbreak out of the strong material that cooperation with the people will provide.

HERONS ON GUARD IN NORTH GERMANY—WATCHING THE NEST FROM A PINE TREE

Reproduced from an original painting by Carl Kappstein, the German artist, whose interesting life and work are portrayed further on pages 85 to 88 of this issue

NATURE MAGAZINE

VOLUME 18 AUGUST · 1931 NUMBER 2

FROM OUT THE DARK

BY E. CHESLEY ALLEN

ILLUSTRATED BY R. BRUCE HORSFALL

SLOWLY and tenderly like a loving mother the June night has enfolded the northern woods. The last measures of her lullaby have ended with the alternate golden fluting of the hermit thrush and the pure whistle of the white-throated sparrow. At the edge of the clearing even the trunks of the white birches have merged into the moist darkness, and now the little cabin shows only as a darker shadow.

A lamp is lighted and placed on the shelf of the long, low window looking toward the woods and the lake beyond.

Almost immediately from out the mysterious recesses and long dark aisles of the forest there comes to its lighted pane a strange pageant of fairy creatures, large and small, of many colors, plain and gaudy, and each bearing the marks of Nature's prodigal but exacting mint.

First to arrive is a troop of tiny moths, so tiny as hardly to be recognized as moths. They alight on the outer surface of the pane nearest the bright light and immediately begin a dance about and among each other in a puzzling series of gyrations like a troop of whirligig beetles on the surface of some quiet pool. Move the light up or down, or from side to side, and they follow its bright lure, but never cease that tireless mazy figure.

Just where, from out the night, emerged this company of fairy comedians, where their destination, why did they turn aside to this little beacon, what the meaning of this strange dance, and what mysterious law governs its amazing movements?

Now the stage is momentarily disturbed as a great brown body bounds against the glass and is gone. But it has not gone far. Just out there on the edge of the light it poises—a Kalmia hawk-moth—over the tempting nectar-filled horns of the climbing honeysuckle. Just below, over another cluster of bloom hovers a relative, the Gordian hawk-moth. Later in the night others will come—little *Darapsa pholus* in a rich livery of brown and tan, and *Sphinx geminatus* bearing on her wings

A lamp is lighted and placed on the shelf of the long, low window looking toward the woods and the lake beyond

Sphinx moth . . . twin spots of blue set in a background of velvety rose

twin spots of blue set in a background of velvety rose. Trim tailor-made moths, these, poising, and probing with their long tongues the nectaries of deep-throated flowers. Often they are mistaken for hummingbirds; but they fly only at dusk or later, when the little wings of the hummingbird are folded for the night.

But to return to the window. Up in this corner of the pane is a pale green may-fly, delicate in every detail. And yet such is the demand of Nature for absolute perfection that to-morrow morning clinging against the sash will probably be found the ghost-like filmy cast skin of this seemingly already perfect creature, left as a useless cast-off garment, and perfect in every detail from wing-tip to the finest antenna point.

Now fluttering against the glass is a delicate being arrayed in pale yellow and rose pink, the Rosy Dryocampa. The complete stripping last fall of a fine branch of maple by those ugly striped caterpillars is more than half repaid by the admiration for the beauty which such destruction has produced.

A hard, armor-clad water beetle lies half-stunned upon the ledge

In sharp contrast to the fair beauty of Dryocampa is the next dark-robed visitor. Ctenucha seems at first to be clothed in sable, but a closer inspection shows that her dark brown over-wings serve only as an outer mantle to hide an evening robe of richest deep metallic blue silk, set off by a necklace of gold.

Next, following each other in quick succession, comes a whole troupe of gay geometrids. First a group with pale yellow wings spotted and blotched with lilac, *Xanthotype crocataria.* Then a delicate little beggar moth, *Eudule mendica,* with iridescent transparent wings. Here a "Scallop-shell", with wings barred in finest alternate wavy lines of brown and white. Still others come. Geometrids with pale green wings; with wings of creamy yellow crossed by one dark line; with wings of immaculate white, or with wings of most delicate black lace traced upon a white field. But why "geometrids"? Last fall in these very woods might have been seen the earlier stages of to-night's fairy-like guests—"measuring worms", methodically looping their way along the ground or up and down the gray trunks of the trees.

During a momentary pause a beautifully mottled creature strikes sharply against the pane and falls fluttering to the ground. Directly it rises and settles upon the window casing. An unexpected guest indeed,—*Hyphoraia parthenos,* a rare northern tiger-moth, the rich brown of her fore wings inlaid with figures of ivory white, and the hind wings banded with black and orange.

As if jealous of the admiration bestowed upon this latest guest pale Luna glides down out of the night and settles upon the outer ledge of the window. Of all the nightly train none so well deserves the title "Queen of the Night." Her body is robed in silk of the purest white, and proudly she displays to nearly four inches' extent her wings of pale green edged with lavender and pink, and each bearing in its centre a jewel-like transparent eye-spot.

In strange contrast and less beautiful though no less interesting is this next guest. Striking sharply against the glass a hard, armor-clad water beetle lies now half stunned upon the ledge. Eons before the feeble groping mind of primitive man had produced his first crude implements Nature had evolved this perfect combination of submarine and air-craft. Flat, oval in outline and sharp edged, she is admirably adapted for progress beneath the water, and like the submarine of modern man's invention is a terror to denizens of the deep even larger than herself. Beneath her convex deck is a reservoir of air which may be renewed when required by coming to the surface of the pond. Stranger still, when the impulse for seeking new waters is felt, the deck may be raised, releasing a pair of broad wings and immediately transforming this creature of the depths into a most efficient air-craft with powerful motors and deadly armament.

Steadily the varied pageant continues, and as the light in the window is darkened there comes drifting in from the surface of the lake the weird rising and waning call of the loon.

Full of the great mystery of life is this little current turned momentarily aside from the summer's great flood tide. Whence its source? Whither its goal? In answer to both we stumble across only stray fragments of evidence. This afternoon the observer was sitting by the gnarled roots of an old yellow birch. As his eyes wandered lazily over the brown and yellow pattern of last year's fallen leaves they suddenly and quite involuntarily became focussed upon a fragment of color of more regular

Pale Luna glides down out of the night and settles upon the outer ledge

shape, which presently revealed itself as a brown geometrid with wings pressed flat against a rolled leaf. The fresh perfection of its wings suggested the unrolling of the dry leaf cylinder, and there, concealed within, was found the freshly broken pupa shell. Here all through the winter and spring this bit of perfect beauty had escaped the prying eyes of the wood mice, the super-sensitive noses of the little shrews, and the searching of the migrant sparrows. The other day beneath a loose flat stone, and fixed firmly to its under surface, was found the brown furry cocoon of a tiger moth. Tomorrow morning a visit to the lake shore will probably disclose clinging to some stone just above the water's edge the empty case or now useless under-water garment of one of to-night's guests, the may-fly or the stone-fly.

And the goal? Obviously to mate, lay their eggs and die. But why all this lavish expenditure of beauty? This is a part of the great mystery. A day, two days, or a week at most, and these wondrous robes are soiled, frayed, or utterly destroyed. Few, too, live to reach the goal. In the very corner of the little illumined window is a net of fine-spun threads, and from within her secret hiding-place crafty Arachna watches many a fragile creature become hopelessly entangled in her silken meshes. And she is only one of a countless sisterhood; for the morning's tell-tale dew will show webs on every shrub and tree. Just beyond the zone of bright light dark figures flit back and forth along the level eaves. The brown bats have learned that in this artificial twilight is good hunting, and the many-colored wings strewing the ground next morning give mute evidence that many would-be visitors never reached the window. By day up in the leafy canopies the ever busy warblers and vireos take their toll.

Yet in the face of ever watchful enemies the tiny eggs of next year's myriad forms will be left upon grass stalk, under bark or in quiet pool. And next year when the great flood tide of awakening life moves northward countless creatures will come forth to meet their destinies.

• • •

WHEN TWO CLASSES FIGHT

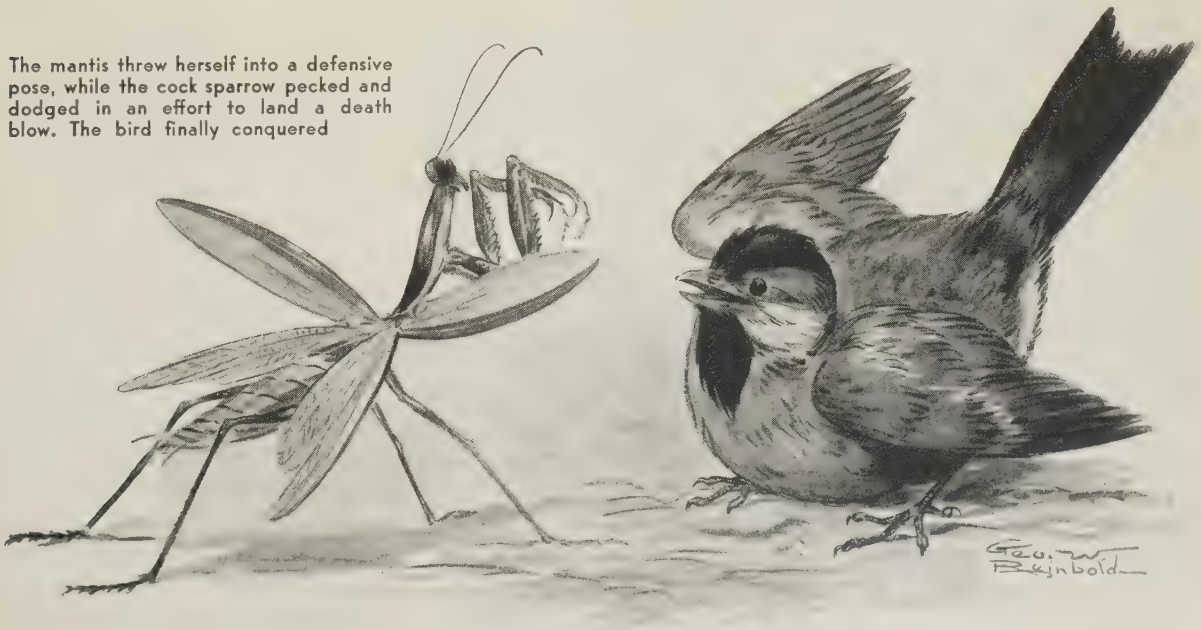
BY GEORGE W. REINBOLD

"OH LOOK! look! Daddy, a fight, a fight!" and sure enough, it was a fight, a battle royal.

A flash of wings, zig-zagging in quick manoeuvres some distance above the path, came to an abrupt halt on its surface. The praying mantis, wings outspread, reared high and with heavy fore-legs struck fiercely at the cock sparrow, who in turn pecked and parried, seemingly with no disastrous results.

Son and I beheld with astonishment this frenzied conflict between bird and insect. It was quickly over, however, for the sparrow soon decided to abandon the conquest either from fear of his antagonist or his audience.

We closely examined the praying mantis, which reared in a defensive attitude at our approach, but found no visible injuries. Considering her an insect friend, we congratulated her upon the victory and went our way. But when we came back about an hour later, to our dismay, we discovered her lying on her back with fore-legs drawn up over crushed head. Evidently the sparrow had returned and taken up the fight. Another of the ever recurring tragedies of Nature had been enacted.



The mantis threw herself into a defensive pose, while the cock sparrow pecked and dodged in an effort to land a death blow. The bird finally conquered

DEVOUT WARBLERS

THEY SELECTED THE CHAPEL FOR A HOME

BY D. K. READING AND S. P. HAYES, JR.

PHOTOGRAPHS BY THE AUTHORS

WHERE THE WARBLERS NESTED
The "Tree of the Thousand Crosses", towering above the chapel benches, was their home

THIS is a story of the mountain coming to Mahomet, with a pair of amateur ornithologists cast as the ambitious prophet, and a family of lovely little black-throated green warblers playing, however incongruously, the rôle of the famous peak.

For several seasons we had seen the handsome greens flitting in and out of sight during migrations and had longed to observe them more closely without, however, having to follow them hither and yon as their freakish whims demanded. During the summer months at Camp Becket-in-the-Berkshires, at the height of the nesting season, we had watched them busily scouring the woods, but never had chanced to discover a nest. Authorities told us to look "in coniferous trees from ten to seventy feet from the ground"—and there are a surprisingly large number of such trees in Massachusetts. Moreover, we could find no pictures of the nest in any of our several books.

Then last June, on the first Sunday of the camp season, in the midst of the Chapel Service, we heard a wheezy lisp—the characteristic sound that distinguishes the song of this warbler from all others. The next instant, a familiar black and greenish-yellow sprite alighted in the tall spruce that backs the rostrum of the outdoor worshipping ground, and we craned our necks to follow it in its quick movements. Without hesitation, paying no attention either to us or to the rest of the gathered campers, it flew to the end of a limb about fifteen feet from the ground, and we could hear the unmistakable squabble and fuss that nestlings make when a parent approaches. Our long-chased mountain had, at last, come to us.

The last echoes of a "Marche Triomphale", that should have discouraged any bird, had no sooner died away, marking the close of the service, than we were off to make our plans for becoming acquainted with our birds. How we had ever sat quietly and outwardly composed during the last minutes of the worship we do not know—for at least a half a dozen times we could see the tiny forms of the two parent birds darting from the woods to the tall spruce, and we were constantly afraid lest the presence of humans should cause both to desert. But we reckoned without knowing our birds.

THE FEMALE REVEALED MORE SOLICITUDE
She came to the nest more often than the male, brought heavier loads and did most of the feeding of her progeny

That afternoon found one of us on a tall ladder four feet away from the nest with a roll-film Zeiss aimed directly at it but two feet above it. It found the other of us on a step-ladder with his head about a foot below the fragile, soft-lined cup. Both of us were peering and clicking the camera while the faithful female still fed her precious youngsters as unconcernedly as though she were miles away from possible enemies. The male was less easily convinced as to the safety of the situation but, after a few false starts, finally braved that queer black fungus and those big slow animals

with the restless eyes, and went back to his hard work.

As we watched, we remarked constantly upon the superior solicitude of the female. She returned twice as often as the male, came more directly, and invariably brought a heavier load. Infrequently, both parents arrived at the nest together and it was interesting to observe that on some of these occasions, the male passed his catch to the female to feed the young birds. We wondered if he felt that mother knows best which youngster was due for the next meal.

THE MOTHER FEEDS FROM THE HAND
Curiously enough, she seemed to get her children mixed, and gave one much more than the rest

Our observations, at such close range, revealed to us as never before the tremendous value of these tiny birds as insect destroyers. Mayflies, green caterpillars, small Noctuid moths, spiders, ichneumon flies, crane flies and many smaller Diptera made up their diet—and there did not seem to be enough insect life in the world to satisfy them.

The shadows were long that afternoon when we left them, and the next day found us back. Two days later, however, violent thunderstorms swept the region and on Wednesday morning we found one nestling dead on the ground, apparently washed out of the frail and overcrowded nest above. We had brought along our "Filmo 70", though we had serious doubts as to the reaction of the birds to its constant whirr. They soon put our fears to rest, however, and proved to be actors unsurpassed. They fed the clamoring youngsters even when the camera was within a foot of the nest, and permitted us to take several hundred feet of their intimate home life to be shown later to the three hundred campers and visitors who now knew of this unusual nesting site.

While engaged in recording their domestic affairs, we noticed an inquisitive chestnut-sided warbler nearby, displaying a good deal of interest in the proceedings. Suddenly, the male blackthroat—ably seconded by his mate—assailed the feathered spectator and in a whirlwind display of aerial fireworks, persuaded him to keep his proper distance. They seemed to intimate that admittance to their "lot" was by card only. A brilliant male Blackburnian warbler met the same fate a little later, while he was peacefully hunting insects in the big spruce. And about an hour afterwards, a red-eyed vireo changed his intended route at the first warning note and promptly withdrew. Curiously enough, a small family of chickadees, travelling slowly through the spruce, were totally disregarded. One young chickadee, evidently of this year's brood, sat calmly on a branch of the spruce and let us turn the camera on him for five minutes, without moving a foot. And we were only about four feet away. Perhaps some birds enjoy being filmed.

Saturday morning, when we climbed to the nest and lifted the spruce twigs that hid it from above, we found the three fledglings all well-feathered, with small white bars beginning to appear on each wing. But now their disregard of us seemed to have vanished completely, for all three clambered over the edge and set sail for the bumpy ground below as soon as we came close. After several ineffectual attempts to replace them and keep them at home, we suddenly were struck with the thought that the parents might be induced to feed the young in our hands. The feat turned out to be rather more difficult than we had supposed, however, and with the little fellows all objecting strenuously and beginning to exhibit minds of their own, with mosquitoes

THE PROUD PARENTS AND THEIR BROOD
They both worked before the camera like veterans, revealing every detail of their fascinating home life

and "punkies" swarming down on us, and with two cameras ready for simultaneous action, we had our hands full. Finally, the female arrived with a load of choice morsels. She went directly to the nest, but, finding that deserted, at last answered the insistent cheeping below by darting down and alighting boldly on the hands that enclosed her progeny, feeding them in the usual way. After that meal, they accepted their strange position with more complaisance, and made it possible for us to take both movies and stills of the touching scenes enacted upon that impromptu stage. The female came constantly and without hesitation, though the male could not be persuaded to do so. It was too much to expect of *him*!

Because of their restless moving about, these youngsters happened to be in a different position each time their mother arrived. And she, trying, as we supposed, to treat each one impartially, fed from a different side each time. In this way, one glutton was fed four times in succession, while his companions went without, though not without noting their exceptions. In the nest they had been so tightly packed together that they had not been able to change their positions much, and this circumstance suggested to us that perhaps they had been fed by position only, and that the parents had been unable to differentiate between them as individual creatures.

Although we succeeded in replacing all the fledglings in the nest before we left them, we found the eldest forty feet up in a tall pine some fifty yards from home late that afternoon. The others were still in the nest at that time, but a storm raged during that night and in the morning the youngest of the family lay dead. Another day, and the last one had bravely set sail across the chapel on rapidly strengthening wings.

While this family grew to maturity in its short sojourn in the spruce, it lost two of its original four babies. We felt it a large proportion to meet such an early death, and we wondered if it might not be the exception. Certainly, in its breeding range, this species is one of the commonest. The whole life led by these birds was, however, unusual. While their ordinary mode of existence is unobtrusive, since, like all wood warblers, they frequent sequestered woods, these all unwittingly chose a chapel for a home, and found instead of quietude a constant exposure to prying eyes and clicking cameras. Rather exciting memories will these youngster warblers have of their childhood in the spruce in the Chapel-by-the-Lake! We doubt, however, that their recollections of us will be as pleasant or as deep-rooted as ours of them.

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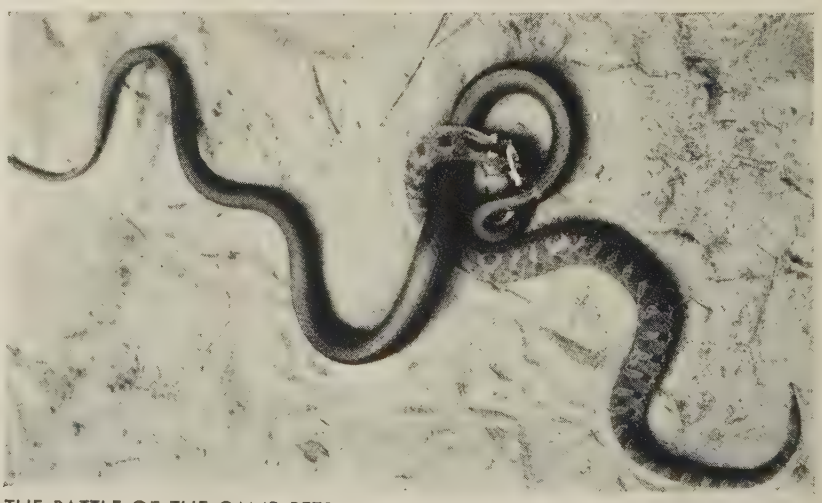
PUFF ADDER VS. BLUE RACER

QUICK ACTION PREVENTS TRAGEDY

BY WAYNE L. WHITAKER



THE BATTLE OF THE CAMP PETS

The slender, quick, dark racer has a deadly hold on the mottled, thicker puff adder, which is weakening and no longer can bluff

"COME quick, my puff adder is being eaten by Jack's blue racer." The breathless youth who dashed into my camp was almost tearful as he blurted out his message, so I quickly went to the rescue, stopping only to bring my camera and tripod. There they were on the sand, the adder firmly in the grip of the other, quicker reptile, and no longer able to use his bluff.

Jack who owned the blue racer, came on the scene, and I obtained the permission of both boys to take a picture or two before separating them. By the time my apparatus was adjusted quite a crowd of boys were eagerly watching, but the snakes were oblivious to all that. They squirmed madly, each intent on fighting to the finish. As neither owner had any intention of losing his pet, however, and the boys were adverse to allowing needless loss of life, after the warriors were filmed they were separated and carried away, almost exhausted, by their consoling owners, to be given special admiration and attention.

This vigorous argument was the only one that took place last year among the snake pets of the boys in camp on Little Blue Lake, Muskegon County, Michigan. The youths seemed to prefer reptiles to other forms of pets, and got a real pleasure from caressing and feeding them. They carried them in their pockets and even wore them around their necks, considering their occasional bites as mere pin pricks. No wonder they did not wish to lose them in a deadly conflict, after all their infinite care.

VAGABONDAGE WITH A PAINT BRUSH

HOW CARL KAPPSTEIN, GERMAN ARTIST, WON HIS FAME

BY PAUL F. HANNAH

ILLUSTRATIONS BY PROFESSOR KAPPSTEIN

WHEN Carl Kappstein was a boy in Berlin, Germany, he used to run away from home nearly every day. His parents did not worry; they knew where they could find him. He would be, they told each other, either in the forests or the parks—for Berlin of the early '70s had many of both—or at the Zoo gazing at the animals. And when he returned, they knew, he would hunt up his paint box and crayons to set down the multitude of impressions his adventure had made on him.

This boyish trait epitomizes the entire life of Professor Kappstein, whom Germany cherishes as America does her foremost Nature painters,—Horsfall and Bull, Knight and Brooks. The bird and animal subjects of his pictures, which now hang in museums and private galleries in Berlin, Munich, Leipsic, Dresden, Budapest and in various cities in Russia, Hungary, Scandinavia and the Argentine, have been sought out in their native haunts in all parts of the world. His ideas on art, which were deemed so worthwhile as to make him teacher at the Royal Academy at Berlin for sixteen years, have been built up by adventuring in the primitive places of South America, Austria, the Alps, and his own native Germany.

Years of stalking creatures of the wild, of watching them under all conditions, have made this artist wise in the ways of Nature. He knows the characteristic poses of the birds and animals, the workings of their muscles, the expressions they assume, the habits they follow, and he has the power to combine with his knowledge artistic

WHEN THE JAWS OF DEATH SNAPPED IN VAIN

Professor Kappstein portrays on Page 85 a common near-tragedy of the wild—the fox creeping on the mallard; the lunge; the narrow escape; the disappointed hunter gazing at his frightened prey. Below is a moose family, placidly resting in an East Prussia forest, near the shores of the Baltic Sea

composition unshackled by deadening conventionality.

Professor Kappstein, sprung from artisan stock, began to learn the "trade" of painting with early childhood. At the age of seventeen he entered the Royal Academy at Berlin under Paul Meyerheim, who was considered to rank in Nature painting with Rosa Bonheur. Following Meyerheim's advice to "stick to Nature", he spent most of his time in the country.

In 1893, he made his first trip to Italy and the deep blue sky and soft colors and picturesque life of this southern land drew him back again and again to paint its charm. He returned to Berlin in 1899, but soon succumbed to the wanderlust,—this time it led him again to Italy, and to the Alps and to Hungary, where the wide plains, the delightful villages, the large herds of sheep and cattle provided subjects for his brush. Other years found him penetrating the jungles of South America, or the fertile plains of the German lowlands, or the Scandinavian Peninsula. And each trip netted fresh knowledge, new and better canvases and unusual subjects.

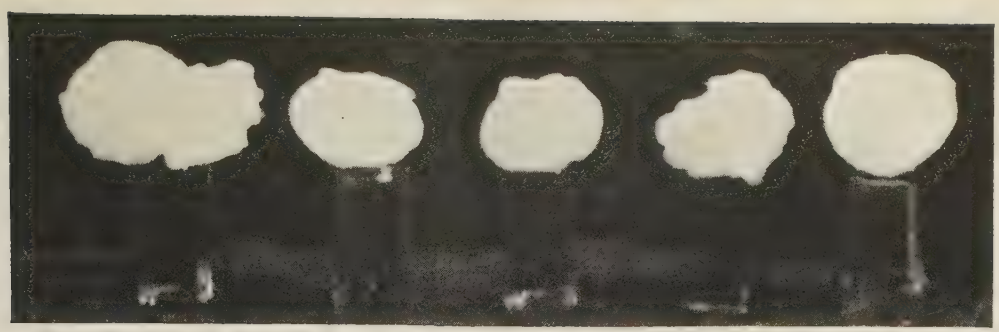
Until 1896, Kappstein had painted chiefly in oils and tempera. Then he began to work in the graphic arts, and was especially attracted to lithography. Experimentation soon led him to the invention of the monotype, and the remarkable results of this new method spread the fame of the artist into new quarters. In 1904, at the "Great Berlin Art Exhibit", he was awarded the Gold Medal for his exhibition of this new mètier.

Few artists show the versatility of this German, who is still painting at furious speed, though more than sixty years old. A series of Alpine pictures showing the massive peaks rising out of swirling mists or bathed in the early morning sun seem to be as perfectly executed as those of the wild fowl, deer, fox, or lynx. His cruel, agile tigers are as ferociously real as his wild boars and East Prussia moose, and the background for each is an accurate, detailed presentation of the native habitat. His monkeys amuse with their quaint poses. He has hunted out his storks, marabous, turkeys, herons and other wild fowl and watched hour after hour to give the exact touch to their actions. There are few European species he has not painted after study in the field.

Professor Kappstein never weighs personal discomforts or regards his advancing years, but still seeks new things to paint. With ever fresh energy and youthfulness, he travels wherever Nature seems to offer a new outlook. He is still the boy, running away to study; the zoologist, who wants to understand how each creature looks and moves and lives, the vagabond painter, holding his mirror up to Nature for stay-at-homes to see.

WITH THE BIRDS ON NORTH GERMAN SHORES

Two scenes painted in the heart of an avian paradise. Below a pair of dignified European fish herons watch the coots in foreground and amid the reeds as they grub for food, and on Page 88, the water hens and wild ducks gather by the bank of a deep river to enjoy the shade of the overhanging trees



HAILSTONES THAT BROKE A RECORD

PHOTOGRAPH BY J. J. NORCROSS

They fell at Potter, Nebraska on July 6, 1928. The one at the right was seventeen inches in circumference and weighed a pound and a half. At the left are two stones frozen together

THE BIGGEST HAILSTONES

HARD, COLD FACTS ABOUT ICE FROM THE SKIES

BY CHARLES FITZHUGH TALMAN

Two or more pieces of ice, melting at the surface, placed in contact with one another, soon freeze into a single mass, even in a warm atmosphere. The process is called regelation. Hailstones lying closely packed together on the ground may thus form lumps of almost any size. It is an open question whether regelation or imagination is responsible for the tale of a "hailstone" as big as an elephant, said to have been found in southern India in the days of Tippoo Sahib. India is notoriously a hail-ridden country. Tremendous hailstorms occur there every year. The hailstones that fall in these storms, though certainly never as big as an elephant, might conceivably kill one, for they have actually killed cattle by the hundred in a single storm. It is not impossible that a large quantity of these stones, lying together in a hollow of the ground, might become a solid mass of elephantine dimensions.

HAIL FROM HARTFORD

Several times larger than an egg were the ice-chunks that assailed the Connecticut city August 1, 1929

The Indian tale just mentioned is matched by another one which relates that a block of ice twenty feet in its largest diameter fell at Dharwar in 1838. Huc, the French missionary, tells of a storm in Mongolia during which a piece of ice "larger than a millstone" fell near his house. During the reign of Charlemagne, according to the old chroniclers, there was a fall of hail in which some of the stones were fifteen feet long.

In the year 1757 there was much excitement in Berlin over rumors of an impending war. In order to give the people something else to think about, King Frederick the Great caused a fanciful story to be published in the newspapers about a hailstorm at Potsdam, in which hailstones as big as pumpkins were said to have killed cattle. The story had the desired effect. The public was agog over the newest phenomenon; meteorology crowded belligerency out of the limelight; and a political crisis was successfully "weathered." What a pity Frederick's latest successor did not think of a similar expedient in 1914!

There appears to be no authentic record of hailstones as big as pumpkins, though they are sometimes bigger than oranges, and decidedly bigger than the standard major league baseball, which is from nine to nine and a quarter inches in circumference.

Unfortunately ninety-nine percent of all the existing records of exceptionally big hailstones are vitiated by some degree of uncertainty as to whether the reported masses of ice fell as such or were formed by coalescence after falling. This applies to contemporary records as well as to the tales of long ago. In 1914 the *Meteorologische Zeitschrift,* the leading meteorological journal of the world, published a description of ten-pound hailstones said to have fallen in China. Two missionaries, one German and one British, saw the stones and weighed them. Their story was unimpeachable but incomplete. A simple statement from these gentlemen to the effect that the hailstones were known to have been of the size reported

REPAIRING THE DAMAGE AFTER THE GREAT STORM

Hundreds of roofs were torn up, car tops were riddled, thousands of panes of glass were broken and acres of crops were ruined in the memorable Dallas, Texas, hailstorm of May 8, 1926

when they fell would have made this case one of extraordinary interest. Unfortunately their narrative ignores this vital point, and thus throws no light upon the question of how big a hailstone can be.

Somewhat less uncertainty attaches to the case of a big hailstone that fell in the village of Heidgraben, some twenty miles northwest of Hamburg, Germany, on August 10, 1925. This case was investigated a few days later by a well-known German meteorologist, Dr. P. Heidke. The stone fell through the tile roof of a house and was picked up on the floor of the upper story. The occupant of the house measured it and found its dimensions to be 9.8 x 5.5 x 4.7 inches. He estimated its weight at four and one half pounds, but this was probably an over-estimate, as a regular ellipsoid of the size stated would weigh about that much if it consisted entirely of ordinary ice, whereas a hailstone is composed in part of snow-like ice, containing much imprisoned air. The size of the stone, however, is interesting, as the circumstances of the fall were such as to indicate that the mass was a single hailstone. Several other unusually big hailstones fell in the course of the same storm.

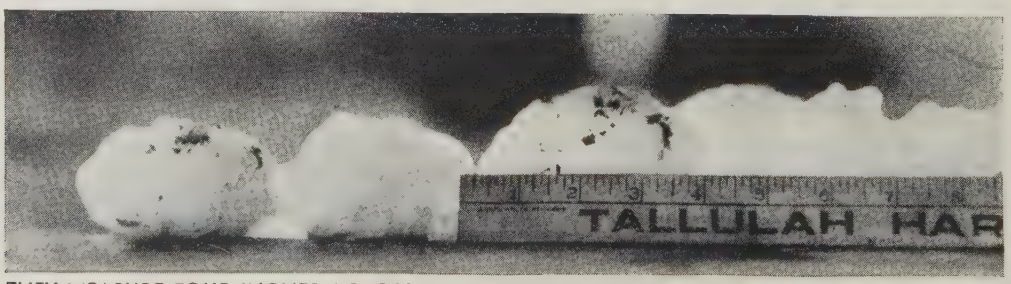
The most convincing record we have of an exceptionally large hailstone yielded by an American hailstorm was published in the *Monthly Weather Review* for August, 1928. The storm occurred at Potter, Cheyenne County, Nebraska, on July 6 of that year. Some of the stones that fell at this time were described by eye-witnesses, including the local coöperative observer of the Weather Bureau, as being "as large as grapefruit." The one that apparently established an American "record" for size was measured, weighed and photographed by a druggist, Mr. J. J. Norcross, who reports the circumstances in the following affidavit:

POTTER, NEBR., *August 11, 1928.*

To whom it may concern:

I, J. J. Norcross, proprietor of the Potter Drug Co., do affirm the following facts:

That on July 6, 1928, following the hailstorm in Potter, Nebr., I gathered several hailstones and measured and weighed them on standard store scales, and that one stone measured 17 inches in circumference and that it weighed 1½ pounds; and that I found another one al-



THEY MEASURE FOUR INCHES ACROSS

These ice particles, which fell at Tallulah, Louisiana, during April, 1929, wrought terrific destruction, as may be imagined

WHERE HAIL LAY THREE FEET DEEP OVER THE LAND FROM DR. CLYDE FISHER

After the storm that raged near Raton, New Mexico, August 2, 1927. Notice the natural ice bridge behind Dr. Fisher

most twice as large but evidently composed of two mammoth stones frozen together. The 17-inch stone was round and hard, with smooth surface, and upon breaking it open I found it was composed of concentric layers built around one center.

(Signed) J. J. NORCROSS.

Subscribed and sworn to before me this 13th day of August, 1928.

[SEAL] A. J. AMES, *Notary Public.*

That the object above described actually fell as a single hailstone is indicated not only by its approximately spherical shape, as seen in the accompanying photograph, but especially by the fact that it consisted of a single series of concentric layers around one nucleus. An aggregate of fallen stones would not show this internal structure, which is characteristic of all large roundish hailstones.

Comparatively few hailstones have been measured or weighed. That larger and heavier stones than any of which we have such statistics have occasionally fallen is a plausible inference from the havoc wrought by some of these icy missiles. According to narratives that appear to be worthy of credence, houses were crushed under "blocks of ice" at Cazorla, Spain, on June 15, 1829, and vessels were sunk by hail at Cette, France, in October, 1844. At Pietermaritzburg, Natal, on April 17, 1874, hailstones are said to have "passed through corrugated iron roofs as if they had been made of paper," and in southern Nebraska on June 20, 1881, we are told that "great rocks of ice," falling during a high wind, riddled the sides as well as the roofs of houses, breaking dishes and smashing furniture. There is a long list of such records.

A hailstone is built up of ice and snow in a series of up and down travels at the front of a thunderstorm, and the size it eventually attains depends upon the strength of the uprushing air current that supports it just before its fall to earth; also upon the density of the hailstone, which may be from about 0.5 to more than 0.9 the density of water. With the aid of data supplied by wind-tunnel experiments, Dr. W. J. Humphreys, of the Weather Bureau, has calculated the force of the updraft necessary to support spherical hailstones of various sizes and densities. For a hailstone five inches in diameter the figures range from one hundred and eighty-five miles an hour up to about two hundred and fifty miles an hour, according to the density of the ice. For a three-inch stone the range is from ninety-two to one hundred and twenty-five miles an hour. Thus all big hailstones imply the existence in the thunderstorm of vertical hurricane blasts which are fraught with deadly danger to aircraft.

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The next special geographic issue of Nature Magazine will be a Colorado number to be published as our issue of May, 1932. It is being announced this far in advance because it is the desire of the editors to illustrate the Colorado Number exclusively with photographs not hitherto published. In cooperation with the Colorado Association, Mr. Richard W. Westwood, Chief of the Editorial Staff, will visit Colorado to gather material and work out details for this issue.

SIX-LEGGED MUSICIANS

THE LIVES AND HABITS OF INSECT SINGERS

BY A. B. CHAMPLAIN

PENNSYLVANIA DEPARTMENT OF AGRICULTURE

ILLUSTRATIONS, UNLESS OTHERWISE CREDITED, BY L. W. BROWNELL

THE BIRTH OF A MUSICIAN

Before the blinking eye of the camera one of Nature's little miracles takes place. A cicada nymph, which has developed from the larval stage underground, has worked its way to the surface, and moved awkwardly to a tree trunk up which it climbs for several feet by means of forelegs armed with sharp claws. Here it remains for several hours. Suddenly, without warning, the skin splits from between the eyes over the head and about half-way down the back, and from this slit the perfect cicada emerges. The back is first pushed out until it protrudes in a hump; then the head is withdrawn. Then, with its forelegs, the insect forces half of its body out of the prison, and stands at right angles, or even leans slightly backward. Here it rests, as if to gain strength; finally it reaches upwards with its forelegs, grasps the bark above the pupa case and with one strong pull frees itself entirely. At first its wings are mere crumpled bunches at each shoulder; its body is pale greenish color. Slowly and carefully, for it is still soft and weak, it crawls up the trunk a few inches, and there hangs for several hours while its body hardens and it gains strength to carry it through the few short weeks of its adult life. In the picture at the right, the wings are just unfolding. The cicada pictured here is the common dog-day cicada, a larger species than the seventeen year cicada. Males of both species, however, have similar noise-making instruments, and give forth sounds which the female has no ears to hear, even if she were interested in the matter.

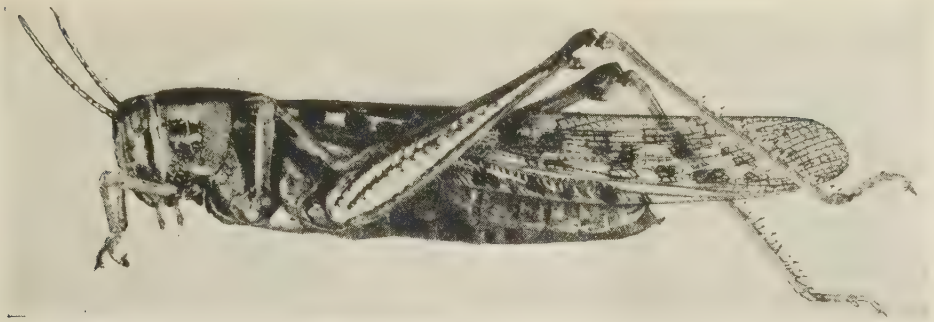
LONG, long ago, in a far distant country, when myths and superstitions still stalked unchallenged over the earth, there once lived two rival musicians, Eunomis of Lochris, and Aristo of Rhegium. Each of these persons considered himself the leading performer on that ancient and honorable musical instrument, the cythera or harp; and considerable dissension had arisen on the part of the admirers of each as to which was the better. So strident, indeed, became the strife on this point that something had to be done.

So the authorities decided to stage a contest in some neutral community. This affair was to take place before the élite of the land who sponsored the movement and tickets of general admission no doubt brought good prices. Referees were probably selected from among the outstanding politicians and nobles, because, not knowing one note from another they had no prejudices on the subject.

Finally the big time came to pass, and together the contestants played. Soft and low at first, the sobbing whispers began to swell and echo through the atmosphere. Thunder, lightning, wind, rain, snow, sunshine—every phase of Nature was interpreted. Finally the harpists ceased and the multitudes applauded wildly. But there was no decision, for the honors were evenly divided.

As the contest progressed—first Aristo and then Eunomis playing alternately—it became evident that the latter held the hearts of the general public. Personality or prejudice, as well as the quality of the music, may have had its effect on the attitudes of the various types of fans—who knows? People were just as human then as now, and clapping, stamping and all the general gallery forms of enthusiasm denoted it. Eunomis was a modest, likable lad, while perhaps Aristo was proud and somewhat snobbish.

Be this as it may, the decisive moment arrived. Aristo played his very latest composition, which was a marvel of sym-



AN AMERICAN LOCUST OR GRASSHOPPER H. B. KIRK

This common musician, Schistocerca americana, is to be distinguished from the periodical cicada, miscalled the seventeen-year locust, and the common cicada

phony, then grandly laid aside his instrument amid great applause. His success seemed insurmountable. Eunomis then took the center of the stage, made his salute and began. Nothing like the beauty that poured from his instrument has been heard since. There was no doubt but that, if nothing happened, he would become the winner. But then an "accident" happened. Did Aristo slily take out his jack-knife and partially sever one of the strings on Eunomis' harp? Or had Eunomis been careless? No one will ever know the truth, but just as success seemed about to smile on Eunomis, he was dismayed to find his high C string about to break, and before he could even think of what to do, it parted. Eunomis saw the coveted laurel wreath going to his rival. Then, at that moment of stress, a cicada flew into the room, alighted on his harp, and supplied the place of the missing string with its melodious "voice". Eunomis went on; he finished in a flourish of glory that established completely his superiority over his companion. The cicada had saved the day.

Perhaps not because of this legend, but due to its own worth, the cicada was made the symbol of melody by the Greeks. The sound of the harp and that of the cicada were called by one and the same name, and a cicada sitting upon a harp was the usual emblem of the science of music. The Greeks also kept cicadas in cages for the sake of their songs; but unfortunately, our native representatives of the family seem to be lacking in harmony.

Our native six-legged performers excite our wonder and admiration, not so much on account of the quality of the sounds produced—as this varies greatly among the many different kinds or species—but because of the sound apparatus itself. The initial noise is produced by stretching and relaxing a pair of parchment-like corrugated membranes which have special muscles attached to them and which are located in the insect's abdomen. This vibratory sound is increased or decreased by a complex resounding apparatus consisting of two cavities covered by the pair of disks, not unlike kettle drums, which are opened or closed by movements of the insect's body. This phenomenon is one of Nature's unsolved wonders and it would be a revelation to anyone if a reason could be found for the air-drums of either the seventeen-year cicada, *Tibicina septendecim,* or the common dog-day cicada.

The sounds produced, harmonious or discordant, depending on your taste for their music, are purely masculine; there is not a prima donna among the lot. The female cicadas, devoid of voices or

In the top picture, the wings are nearly expanded, and in the centre, they are fully so, but so soft and limp as to be useless. They are almost transparent with pure white veinings. Below, the body of the creature has turned dark but the wings are still light; the veinings have not turned dark. At the left are the perfect male and female cicadas. The female now lays eggs in twigs; these hatch into larvae, which burrow into the ground, and eat and grow for several years to be.

H. B. KIRK

A CLOSE-UP OF THE SEVENTEEN-YEAR CICADA

The plates at the point of the arrow cover the sound-producing organs. A relative of this creature has been a symbol of music through the centuries

sound devices, are also apparently without ears. They do not appear to be affected or influenced in any way by the shrill squalling of their mates. If this is not a love song, why the questionable music without any apparent reason? Even among the gentlemen themselves (though they may argue all day long from sun-up until dusk, during the hot summer months) not one convinces the other that his argument is heard. So it cannot be a call of defiance. We can only charge it up to habit and let it go at that. Science will eventually remove the veil and disclose to us the reason for some of these natural mechanical marvels.

Turning to those familiar representatives of the sound-producing insects, the crickets, we find a simpler problem. Now here is romance. There is no mystery about their musical contrivance; they carry their fiddles and bows on their backs. Again it is the male only that produces the *tic's* and *chir-r-r-rp's*, and he does it with his wing-covers. By lifting both and rubbing them together, he causes the little file-like ridges on the under side of the right one to rasp against the ridges or veins on the upper side of the left one, thus making the frictional chirp and chatter. Simple, isn't it? It is said by most authors and investigators to be principally a matter of courtship; it also serves, no doubt, as an expression of pleasure, happiness and contentment, and possibly of the contrary emotions. The female is not able to produce the music, but she seems to hear the call of her mate; for strange to say, the organs of hearing are located on the forelegs. If we examine crickets closely we will find oval openings on the tibia of the first pair of legs. These are covered with thin membranes which answer for ears.

A DIGGER WASP GETS A VICTIM

The female drags a cicada, paralysed by her sting, to her burrow, to serve as food for her young

Anyone who will take the trouble may observe the crickets on the job nearly any warm, summer evening. Following the ideas of the greatest number of observers and writers on the subject, we are satisfied that in part their renderings are love songs. Let us see how one that we have tracked to his basement home under a stone behaves. But be careful; our virtuoso is timid and will cease playing his "fiddle" at the least noise or disturbance.

Reversing the tactics of Romeo and Juliet, our lovelorn swain comes to the door of his burrow—and no farther. He then begins to play, in stridulent creaks and chirps, all the cricket airs that he knows. These may range from lyrics to jazz in cricket terms, but to us they are just chirp-chirp. Soon some lonely cricket-Juliet will timidly peep from her bower. As the notes of her calling serenader grow louder, she will approach closer and closer. Finally, charmed by this extraordinarily impassioned entertainment, she can resist him no longer. She then essays a little chirp, made by opening her wing-covers; but it is enough. Romeo's loud "chirrups" are then succeeded by more subdued tones, little tender voicings. Our hero has won his mate.

To lovers of the out-of-doors, the music of the chirping field crickets is not unpleasant. Don't you remember how

"KATY-DID, KATY-DIDN'T, SHE-DID" H. B. KIRK

The sounding boards to which the arrows point are responsible for the evening song of the male. The female, at the right, does not sing, but merely listens and marvels. At the left is a male with wings spread; in the centre a male at rest

when you were camping, rolled up in blankets for the night, their songs and lullabies soothed you to sleep? It is interesting to know that many creatures receive their names from the sounds they make. The name cricket in the various languages is evidently derived from the sounds produced by these insects. It is, for example, *cri-cri* in French; *krekel* in Dutch; *cricell* in Welsh.

In addition to the variety of "fiddlers" in the cricket family, we may find that their relatives, the long-horned grasshoppers and katydids, contribute to the general "out-door" harmony. They also rub parts of the bases of their wing-covers together in producing their "melodies". Fortunately for the ears of those who are annoyed by these rasping love songs, the females are mostly "soundless". Imagine what it might be like if all the ladies responded "in voice".

The main topic of conversation of the katydid is known to most persons, as his name gives it away. In his talkative moments he refers constantly and almost articulately to Katy—"katy-did, katy-didn't, she-did". It is the best he generally achieves, but attempt to grasp one and he gives out such a rasping "squak" that you are startled or may flee in terror ere he nips you with his strong jaws.

Living among the dense foliage during the daytime, and matching the leaves in color and design, the katydid is difficult to locate. At dusk he quits his lurking place and ventures forth to call his coy and reticent lady-love. For this purpose he is blessed with a stridulating apparatus superior to that of any of his cousins and he can out-call and out-do any member of the grasshopper clans. He begins at nightfall to tune up his instrument with a half dozen preliminary notes. But when he once gets under way he can keep it up, intermittently, all night long. A nocturne played in the "theatre of the wild" by the katydid ensemble is worth anyone's time and there's no charge for admission.

The musical organs of the katydid consist of a pair of drum-like membranes, thin and transparent, stretched over a half-oval frame, and veins and ridges which rub together. These contrivances are located at the bases of the insects' wing-covers. The noise is produced from the friction of these instruments against each other when the katydid opens and closes his wings. The curved outer wings and membranes also serve as sounding boards for the stridulating apparatus. It is said that the call of the katydid can be heard at least for a quarter of a mile. Who could expect as much resonance as this in an insect?

The locusts may also be included under the musical insects' union. We have already referred to cicadas, which are often miscalled "locusts", but now deal with the additional relations of the crickets and grasshoppers. Locusts and other short-horned grasshoppers, of which there are a great number, do their bit to add to the din of the out-of-door concert. They perform, however, in a different manner from their kindred. Instead of rubbing together the wings, the locusts fiddle with their legs and wings. And it is again the male that is musically inclined. His hind thighs, which are set with small spines, are rubbed against certain portions of the wing-covers, causing them to vibrate. In addition to this method, we may hear the snapping sounds made by them as they beat their wing-covers against the stiff edges of their wings while in flight.

Thus are our crickets, grasshoppers and locusts the music masters of the insect world. Orthoptera, the great insect order to which they all belong, seems to be the most musical insect order of all. Yet there are other sound-making insects outside this class that should be considered.

A spring or summer landscape would not be real without the hum of bees, that flit from flower to flower. Their busy murmur at once conveys our minds to fields of clover, to fragrant blossoms; or recalls to us the sweet nectar provided for discriminating tastes. In addition to the buzz and hum of their wings, some bees and flies make a piping noise. This sound is produced by the vibra-

tion of membranes at the openings of their spiracles or breathing apparatus.

Mosquitoes are said to sing in this manner. We remember how their "voices" carry across the room. Forget for a moment their chief duty (which in our estimation is to annoy human beings), and consider their musical possibilities. When you set the radio going, can you imagine that this popular gossip of the air is not a novelty with mosquitoes? If you had landed with the first settlers you could observe them broadcasting and receiving, then as now. With them it is the female mosquito that "sings"—and, incidentally, bites. And when and wheresoever she may be, certain sounds or tones when flung by her to the atmosphere are communicated to some waiting male. His antennae or feelers are provided with delicate hairs that react to sound waves of proper value, and he is thus able to direct his flight to the side of his waiting mate. We are told that certain other insects have made use of this method of calling their mates for ages.

When we investigate the tenants of the back lots and the wildwood, we hear a variety of music in the air. Even the little, long-horned beetles deserve a passing notice. They congregate in their corners and emit a timid "squeak, squeak" as they nod their heads in an approving fashion. The squeaky noise is made by the movement of the head against the thorax. Other beetles, present with "fiddles and bows" or scrapers, rasp or stridulate in merry sympathy. Then we have those creatures of delicacy and elegance of form, the butterflies. Strange to relate, it is said that our common Mourning Cloak with its wide, dusky wings is able to emit a faint squeak. Just how it is done is not clear. Other butterflies and some moths are also accused of making sounds. How wonderful that these little creatures, furnished with a mode of communication all their own, have a way of influencing each other's movements or expressing their joys and sorrows! It shows the resourcefulness of Life in providing a way for them to learn all the gossip and little secrets of their brothers and sisters and how to behave according to the insect rules of etiquette. There is no doubt that many insects make noises that we cannot hear, and which are perceptible only to their own kind.

The whole list of six-legged musicians is far too long to deal with here, nor have we room to go into the technical details of their songs or musical contrivances. If you enjoy this sort of thing, get out your books on entomology and here you will find a lot more about it. But music or noise, call it what you will, the sounds that insects make can never grate harshly upon the ear or heart of those in tune with natural harmonies. On the other hand, as regards these "songsters" we must remember—there is no music that is vocal in the great chorus of insect serenaders. The sounds are not voices, and they do not come from the mouth, but are produced principally by rubbing rough surfaces of the body together. However, for all that our summer minstrels have a short life, it is a merry one. And when the insects of summer have hummed their last with the advent of Jack Frost, there is a loneliness in the fields, woods and hills.

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THE GREEN TURTLE OF AUSTRALIA

BY KILROY HARRIS

IN THE warm waters around northern Australia, big turtles abound. They resort to the coral islands to nest, scooping out hollows in the sand above high tide mark. After the eggs have been deposited these hollows are filled in, and the turtles return to the sea, leaving the eggs to be hatched by the hot rays of the sun beating down through the sand. Then the young turtles struggle through the sand as best they can. Turtles often lay one hundred and fifty eggs at one time. It is not unusual to see from fifty to two hundred turtles basking close together along a beach. They often grow two feet across the back, and some are so big that the aboriginals often have a ride on them as they plod slowly along the beach, or swim in the water. It is not rapid transit, however.

"TO ONE WHO HAS SPENT EVEN A BRIEF HOUR BROODING OVER OARS, NO GRAY-HOUND OF THE OCEAN CAN BLUR THE MEMORY OF THAT ABSOLUTE PEACE . . ."

MUD-DWELLERS OF MONTEREY

A TALE OF MORNING FISHING FOR THE QUEER DENIZENS OF THE SLOUGH

BY ADELE MASSON

ILLUSTRATIONS BY R. BRUCE HORSFALL

FIRST I got a tide table from the Fishing Tackle Palace, so to all appearances I began as a fisherman. I even signed my liar's license whereby I was empowered to "Lie, Prevaricate and show other recklessness with the Truth relative to Fishing for the Coming Season. . . ." I thought it prudent to do this, for although my spoil were to have no backbone and scientifically were not fish at all, still, many people would think they were and would not believe the actual facts without the seal of Ananias. I was not concerned with the open ocean, but with Elkhorn Slough near Monterey, California, which is locked in the dunes with a tidal administration of its own. So the tide chart was amended by local experience, and a Friday ebb selected.

The equipment of a trip of the sort I was to take consists mostly of mental attitude. A boat is necessary, though not more so than boots, for a flat once attained, I find it handy to tow my barge. Then, too, a sieve for dredging. If clams are to be the quarry, a shovel is needed, an ovally-pointed one and with a long handle. And lastly, a jar for the delicate surprises one is bound to find. In case the surprises are not so delicate, a bucket, or simply the bottom of the boat will serve the emergency. A small boy, preferably of unknown origin, is your mascot. These accessories are found at any bait stand sufficiently disreputable to be efficient. My order was filled that fateful morning at Red's, the beachcomber's.

To one who has spent even a brief hour brooding over a pair of oars, no knack of speed, nor the slickest gray-hound of the oceans, can blur the memory of that absolute peace. Waves cannot strive with the deep quietude of pools; their torpid secrecies are the culture of life. As our boat slid under the shadow of the trestle, we caught the gleam of the barnacle *Balánus*, a white bark on a core of piles. The larvae swim freely, then settle down on something solid—wood, rocks, the old keels of ships—and grow themselves lime houses in colonial style. Thereafter they depend on the beneficence of the tide. At flood, each little "acorn" spouts a tuft of feelers and curries the water in rhythmic sweeps. The structure of the animal proclaims it a crustacean, despite appearances which seem to classify it with the mollusks. *Balánus* is a hobo shrimp which has taken to shell life, lacking ambition even to court. The individuals are bi-sexual and give and take germs of either gender, which are shifted by the tides.

There was no wind as we paddled, but steam, scented with salt, excited the nostrils—the vital stench of protozoa breeding and dying in the meshes of their marsh. Above, the cry of a killdeer called us to see the bird alight and to discern its hiccough in a crowd of plovers.

I quieted the boat and planted one boot on the edge of a flat; whereupon myriads of *Phoronopsia* furled their tentacles, passing from a green scum to the silver safety of their tubes—not quite all, however, for my sieve detained some of them. When a handful of mud had been sifted under water, about a hundred sand-stuccoed tunnels left their living architecture stranded in my palm. Held to further account under a lens, each tunnel dislodged an angry, wormish occupant, brandishing a shock of green tentacles, which had seemed to be the tiniest coat of mold before Science cancelled the lease these worms held on their homes. In the shallows, purple "olives" pivoted on their toes, or munched from some invisible diatom the energy on which to loaf. These were the wampum of the early Indians. Today, shell art studs its finer mosaics with *Oliva's* pits.

In the lee of scraps loitered their cousins, the nudibranchs—slugs by any other name would be as lazy. *Hermissenda,* a transparent bit of languor tipped with iridescence, was the most common. Two fringes of lavender papillae quivered along the dorsal edge, and when the animal expanded in the sun, it had all the petaled beauty of a dahlia. We gathered a pair, probably not in the least congenial, for their further bloom which the microscope would unfold. A shoal of goby fish which

I was hoping to waylay gave one dart each and disappeared in a flourish of silt. They were recovered with very dirty faces and demoted to the rank of rowdies. Goby, be it known, is only a bull-head, consisting of two inches of furtive gray, but he has the habit of teasing six foot zoologists. One of his kind is generally found in the burrows of a particular shrimp, the *Callianassa*, which leads a devious existence in tenements of mud. It might seem compromising for a fish to burrow, but what looks like a mesalliance in Nature is often a purely business relationship, and in the case of parasites amounts to swindle. Goby, however, is probably an honest garbage man that cleans up what the shrimp does not use.

As we trudged inland, two little punctures in the mud indicated the portals of the savory bent-nose, *Macoma*. On the half shell, it makes excellent picnic, and I never forget a slice of lemon. Having tasted "blood" in the form of the elixir of clam, I began to contend with the larger holes through which the gaper, *Schizothaerus nuttallii*, sent occasional jets or posted the horny end of his enterprising siphon. This is the chowder champion with a dozen inch girth. A single shell has spanned eight inches, but the soup was tough. The gaper is a slovenly chap, and being afflicted with low valve pressure, is unsuitable for shipping. But as *pièce de resistance* he is the campers' own. Sometimes in digging several feet in pursuit of the supposed chowder I came instead upon a very nervous ghost-shrimp, *Callianassa*, the consort of goby. He is a flimsy fellow for all his five inches, and his carapace affords him but scant privacy. At least two of his functions, the heart and the gills, may be watched in full blast. *Callianassa* is an intermediate between a shrimp and a crab, and when we saw him, he was folding up his hind quarters preparatory to side stepping. His white armor looked spectral against the black of his native mud. Ghost though he is, he develops considerable blandishment in an aquarium. A test tube fits his figure and affords him healthy vexation.

Also loose on the flats were robust cockles, and the little-neck, *Paphia staminea*. But these were too large for my circus. I gathered instead a clump of eelgrass for the sake of capturing its tenants,—bryozoa, egg masses and the clownish *Caprella*, which is a kind of dislocated sand flea. Magnified, the gestures of this last-named little mite are as absurd as its shape, which resembles nothing so much as (imaginations, leap for your lives) a sliver on skates. But the prize of the eelgrass was the delicate hydroid colony which I found.

"BUT ON ONE ELEVATION, A LIVELY HUDDLE WAS IN PROGRESS. LEGIONS OF BILLS MADE BULLS' EYES AT THE WORMS. THE SANDPIPERS FLASHED WHITE, FLASHED BLACK, THEN WINGED THEIR MARCH TO LESSER LOOT. MEALTIME WAS PRESSING. . . ."

It looked like a shrub and moved like an animal, and is a border case between the respective kingdoms. Only recently has it been assigned a zoological status and earned its name *Obelia.* "Bud," "flower" and "seed" are separate individuals; each group is a function in the life of the whole. The flowers feed the community; the buds resolve themselves into a pile of saucers and swim away. These are the founders of new colonies and are known as medusae. Each eventually lays not a hydroid but an egg or seed, and these hatch not a medusa but a hydroid, which in turn dispenses more medusae. The process is alternate generation, an institution in lower life. It is as though there was an interloper between the chicken and the egg! *Obelia* relates distantly to the jellyfish, and is a star performer under the microscope.

The tide was rising. Stealthily the rim of the flats contracted, the isles of ooze began to submerge. It was time for a change of perspective, so I straightened my back and surveyed the arrival of day. Overhead all was an empty gallery of haze. Not a wing. But on one elevation corralled by the tide, a lively huddle was in progress. Shore birds have to avail themselves of the whole interval of ebb, since their food is the fauna of exposure. No lull here in the business of free marketing. Legions of legs were on the run; legions of bills—and in the case of godwits their entire head—thrust into the juicy mud and made bull's eyes at the worms. The sandpipers flew at their food in military formation; flashed white, flashed black; did hurried skirmishing, then winged their march to fresher loot. Mealtime was pressing. Curlews probed with a poise noticeably impaired by a shortage of mud crabs, and yellowlegs waded up to his crop. Even the gulls, most cosmopolitan in taste and resource, lifted their soles to a gait becoming the high pursuit of sustenance. One evidence of detachment, not counting the coma of a pair of pelicans, was seen in the attitude of a single crane, though in the tilt of his head I suspected attention. On the other side of fields of saltwort, at roost in a cypress hedge, waited the night herons for the coming of dusk. Their time was not yet, but each was haunched vigilantly about his own ever-watchful eye.

Where we had sloshed two hours before, we now paddled in deep water. Our faithful boat, still tethered to its drop, seemed eager to be off. As we approached, a bundle of kelp attracted my notice by its unaccountable presence. I was lurching a kick just for luck and to see what would resent it, when the bundle itself flopped over and began to swim. At that instant a Mosasaurus would have looked familiar, but not this thing: a slug, reddish brown, limp and so furrowed that it resembled a torn ruffle eighteen inches long and real! It was the sea-hare. I knew of his way of sawing sea weeds, of his three stomachs and his internal shell. This was the mollusk of the double sex—I had read about it but had never seen it—and here was one, horns and all, escaping! If I had skipped any heart beats I made up for them now. I plunged both fists and tried to grab him, but he poured from my fingers like the water in which he swam. Once on the defensive, he let loose an exhaust of blue dye, lending occult uncertainty to any guess concerning his position. It was the old army game, a trick that mollusks have had up their mantles since Cambrian carnivals became subject to raids. But there was nothing to be gained by overdoing it, for after a while, the bottle, or whatever it is that keeps his "ink", was depleted. That was the end of his resources and the beginning of ours. We saw him head for a shallow neck, aiming no doubt, to supply his lack of natural concealment with an artificial shade. Dumb Bill looked at me with such intensity that it finally ignited an idea. I sketched a manoeuvre and he waded around to the gate of the channel. Spreading both feet he dropped on his hands and made a living canopy. Meantime I swept the slug with a strategic shovel. When *Mr. Stupid,* courteously alluded to by Johnson and Snook as *Tethys californica,* had flapped himself squarely under, Dumb Bill sprang the trap and fell on him from four directions. That was that. We bucketed our game and soared wing-booted back to our little ark. Nor would we be bothered with hunting any more. Anything after this would be anti-climax.

WHEN BETSY, THE CHILDREN'S FAVORITE, GOES TO WORK

This "elephump", one of the favorite animals at Benson's Wild Animal Farm at Nashua, N. H., lends a shoulder in the farming operations and helps to earn her keep. She rides children on her back afternoons but spends the mornings with plow or rock drag. Pulling up tree stumps is mere setting-up exercise for her and keeps her in condition for a summer of riding the kiddies around the plaza of this place, which is the American distributing station for the firm of Carl Hagenbeck of Hamburg, Germany

"IT SWOOPED TOWARD THE DOG IN A LONG CLEAN GLIDE"

"THIS RAVEN OF OURS PERCHES ON THE TWISTED, TORN SHOULDER OF A GIANT FIR PROSTRATE ON A BEACH"

OLD NEVERMORE, THE OUTLAW

BY BEN HUR LAMPMAN

ILLUSTRATED BY R. BRUCE HORSFALL

No bird, unless it is the owl, has so gripped the fancy and superstition of men as has the raven. He is written large in the history of peoples, and always with a strange commingling of reverence and awe. The Northmen bore his sable likeness on their standards, those times they roved the seas and took tribute from many ships and lands. The Orient made of him a demi-god, seen through the hazes of mysticism. Poets and philosophers have yielded to his moody spell, and warriors have read an augury in the slow beating of his black, bodeful wings. Unlike his cousin the crow, he is a self-sufficient bird, little given to amiable gossip, and where his shadow falls death is or has been. Some will have it that the sootiness of the raven's plumage, as that of other corvine birds, has bestowed on the raven his melancholy repute—but these would discount the intuitions and discernment of earlier generations. It is in the demeanor of the raven, his gravity, his habit of haunting the slain, that the origin of his mystic significance is found.

Now a crow is given to rejoicing in the free company of the flock, so many black vagabonds together, bent on the one project and happy in their mischief. The sun makes opals of their glossy feathers. They are down in the young corn. They are away to the cottonwoods. But a raven is as content with his own company as any misanthrope, and though he sometimes foregathers with his kind he regrets them not at all when he is tossed by a lonely wind or is solitary on his snag by the sea. He seems deeply given to his own thought, and to the slow, deliberate sorties that reveal his hunting ground, and to what appears to be a melancholy yet agreeable introspection and loneliness. And his cry is a croaking without hope, reft of any nuance of happiness, as though he had long since come to regard this as the worst of all possible worlds and had proved the dismal theory to his own satisfaction.

Yet a trickster of parts, a sly rogue and of infinite resource, as a thousand references of literature attest. Thus in the preface to *Barnaby Rudge,* in which novel a raven is a character, Charles Dickens relates of a bird he had known: "He applied himself to the acquisition of stable language, in which he soon became such an adept

that he would sit outside my window and drive imaginary horses with great skill all day. His gravity under trying circumstances I can never forget, nor the extraordinary gallantry with which, refusing to be brought home, he defended himself behind a pump, until overpowered by numbers. It may have been that he was too bright a genius to live long . . . he was taken ill and died before the kitchen fire. He kept his eye to the last upon the meat as it roasted, and suddenly turned over on his back with a sepulchral cry of 'Cuckoo!' Since then I have been ravenless." Stories of the thievishness, the individualism, of ravens are as innumerable as the tales of their remarkable ability as linguists.

RED-WINGED BLACKBIRD

Not long ago—on the beach, it was—I was permitted to witness the mischievous prank of a wild raven—for mischief it surely must have been. Far down the beach, and in advance of me, raced the collie Tam, scattering sandpipers and affrighting the soldierly cormorants on their dark, spume-swept rocks. As the collie ran, joyous to be near the sea and to drink the salt wind, a raven sallied from its snag on the cliff. It swooped toward the dog in a long, clean glide, and gave chase to the unsuspecting Tam, still legging it at his best stride. The black wings beat a fast and faster measure as very slowly the raven overhauled the collie. It was above the rump of the speeding quarry, still unaware of his pursuer; it was at the shoulders of the dog and no more than a span in air. And then, whether he glimpsed or heard the raven, or by some strange intuitive knowledge knew that the haunter of battle fields was over him, the collie dashed sharply aside, his slim head lifted, his fangs bared. And as he dashed he threw himself twistingly into air, where white teeth met at a handbreadth from the raven's breast. It was lupine, instinctive, ancient, that gesture of raging antipathy. Yet the raven sheered away without scath, and again gave chase. And twice and thrice the dark tormentor hovered above the collie, inciting him to futile leapings, before it drew off to the cliff and perched again to watch the tide and see what the sea might give. Beyond dispute this was mischief of the merriest, or the most malign, as you may choose to see it. The raven had taken sport of the collie, and, one may as well conclude, had confirmed itself in the opinion that ravens are the chosen of Providence, and that mere quadrupeds are stupid and ineffectual.

And in winter, when foam is driving from the bits of the breakers, and flotillas of surf ducks rise and fall to the movement of a tremendous breast, one has seen the raven, the Nevermore of Poe's dark verses, at such employment as has given him in part his evil omen. A yellow cliff, banded with the rich browns of rust—a precipice down which the firs are hurled. A gray sky and a gray wind, and a southwest rain sweeping the impacted sand with the shrewdness of sleet. And from the fishing rocks, where the grenadier cormorants perch, the hollow thunderings of the winter tide.

It is then that the western raven is lord of the beaches—wrecker, rover, beachcomber and pirate wrapped in the one black vestment. The snags are his vantage points, whence he sallies, and all that comes to the shore, living or dead, is tribute to his sovereignty. On such a shore as this, on such a day long bygone, the vikings must have marked the raven for their own, bidding their women weave his dread contours in their standards. When the men of Devon captured the raven standard, after fierce conflict, they held carnival, as well they might, for it was the banner of terror and the Danes had named it the landeyda or "land-waster." Of the time when Harold broke the power of the sea kings, Tennyson wrote:

> We have shattered back
> The hugest wave from Norseland ever yet
> Surged on us, and our battle axes broken
> The raven's wing, and dumbed the carrion croak
> From the gray sea forever.

The flaxen-haired women, white and pink as flowers, wove the raven as they knew him. And the Norse artists, toiling with their pigments, drew him as they had seen the bird. The pertinence of this is remarked in the fact that commonly they depicted the raven with outstretched wings, and with spaces between the outermost primaries—curved, lean whitenesses between the great flight feathers of those sable wings. These are the badge of the raven in flight, or when soaring; for at this last he is almost hawklike in habit, and will descend to the beach as a falcon might. The spaces between its primaries in flight, the greater size of the bird, its impressive deliberation and its manner of reflective evil, will aid you in determining that it is a raven and no crow you observe. Likewise it is remarked that the neck feathers are long and pointed, forming a semi-ruff, and the bill is strong and slightly hooked. But we must back to our beach, where the raven watches, lustrous in the gray day.

The ravens of Odin, god of the Northmen, did sit upon his shoulders and whisper in his ears. Their names were "Reflection" and "Memory." This raven of ours perches on the twisted, torn shoulder of a giant fir, prostrate on a beach that is a week's march from the tree's forest. The fir has known the thrush and the song sparrow. It has known the sweet waters of hill springs, and the chanting of rivers. Now it has the raven for its tenant, the salt sea for its drink and the beach for its

burial. The reflection of the raven is in this wise: That soon the surf shall bring a tattered, weakened sea-bird to shore. And the memory of the raven is after this fashion: That the ravens have ever flourished on death. What curious, dark and direful poetry was in the heart of an ancient people that chose this bird for the motif of their fierce wanderings!

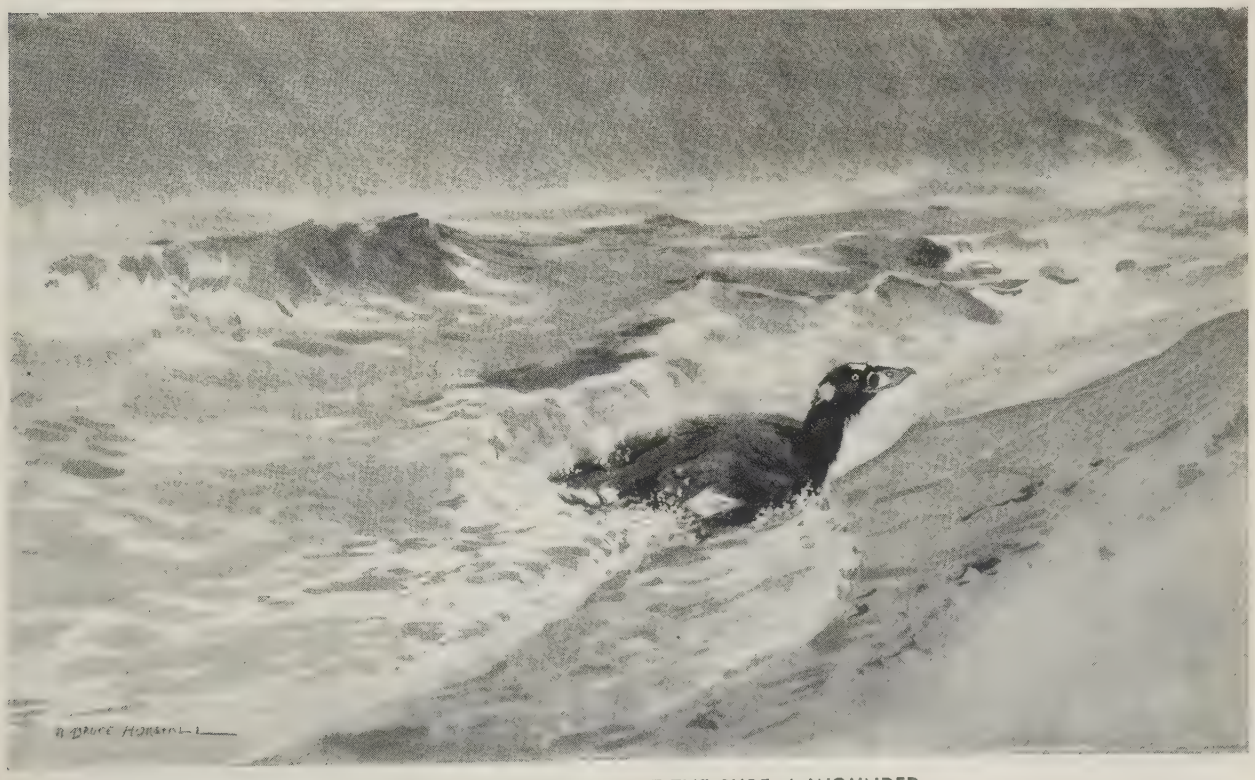
Striving pitifully against the surf, and tossed and tumbled cruelly, a wounded surf duck is borne to shore. At best an indifferent footman, and now too spent for flight, it toils slowly and with frequent pauses up the tawny sand, to seek a sanctuary—and to await death—in some crevice of the drift. If it wins to the drift it may die slowly, unless some minor carnivore seeks it out . . . if it wins to the drift. A hundred yards, you say? All things, even space and time, are relative. You might with fitness term it twenty miles of weakness and of pain. But the raven launches from his snag.

Without a wing-beat the black harrier comes glistening down through the gray wind—and there are spaces of gray day between his flight feathers. A single wing-stroke distant from the surf duck, lightly on the sand; then gravely, solemnly nearer, stride by priestly stride. Look away, for this which follows is merciless, though merciful. It is lawless and terrible, yet lawful. Look away, for this is death.

In like fashion the raven deals with eggs and fledglings, with the weak lambs whose mothers are not nigh—and so contrives to justify the bad repute in which he is held by farmer and stockman. Yet I have here—for it is a strange character that is all sinister—a letter written by a rancher's wife who has a raven such as Dickens kept. The bird was taken from the nest, a sprawling youngster of appetite and pin-feathers, and of the brood it alone escaped the grim sentence which ranchers have in store for ravens. This bird, grown sleek and black and wise, attends her at her household duties, and is as mischievous as it is sage, as humorous as it is solemn and pontifical. And though its tongue never has been slit—that old barbarity we so often are urged to try on the corvine birds—it has mastered several words, and some of these correctly conjoined in pairs. She will not grant that any parrot could be so knowledgeable as her raven, nor so friendly, nor, as she vows, such a comfort to her on the ranch. These tales of ravens that have been friends and companions to our kind are innumerable and have their earliest references in antiquity.

Man should be last to reproach any creature for the manner in which it gains its livelihood. Man should be last of all. There is a law that governs, and its ordinances are many, and by that law the raven lives—and dies. It is enough. That which should concern us in greater degree, in our contact with the lesser creatures, is the study of their ways and characters—their reactions to the affair of living.

On some gray day in winter, somewhere along the beaches—or it may be inland where there is profitable banditry to be practiced—you will see a huge bird in ebony, lacking the sprightly manner of the crow, a bird strangely grim and commonly silent. In flight he will show you the sky between his outer primaries. It will be Old Nevermore himself. You will have seen the raven. Look well at him, for he has fired the fancy of men these thousand years or so, and brought himself no little fame.



"STRIVING PITIFULLY AGAINST THE SURF, A WOUNDED SURF DUCK IS BORNE TO SHORE"

HOWARD ATWOOD KELLY

IN WHOM THE NATURALIST RIVALS THE PHYSICIAN

BY PAUL KANE

The editors take pleasure in presenting, as one of the articles in the "hobby" series, this sketch of the Nature interests of a leader in American surgery

CLAUDE C. MATLACK

DR. HOWARD ATWOOD KELLY IN FLORIDA

The seventy-three year old medical man on one of his Nature trips to the Everglades

"I LOVE to study Nature because I find on all her open pages the signature of the Creator, my Father."

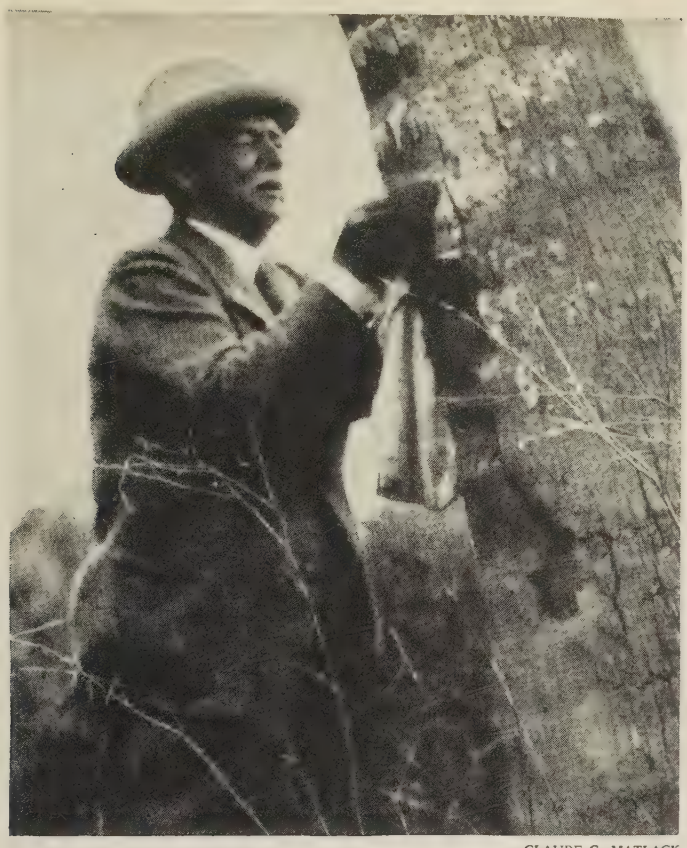
In such simple phrase did Dr. Howard Atwood Kelly, one of America's leading medical minds and a naturalist of achievement, explain his hobbies.

"I want so long as I live to study the laws that govern our universe and to know as much as I can grasp about the innumerable varieties of life inhabiting our globe. Out-of-doors and Nature have ever been almost my sole recreation in an active professional life."

Dr. Kelly was talking to me in his workshop, a large room on the second floor of the library annex to his substantial Baltimore home. As we conversed, a big king snake, *Lampropeltis getulus* of Florida, was slowly working its way to escape from view in a cotton bag in a corner of its cage; nearby were a couple of leopard snakes, torpidly sleeping, surfeited with the milk just fed them. Leaning against bookcases filled with medical works were huge test tubes of alcohol and formalin preserving the remains of many of the most dangerous characters of reptiledom. At one end of a bookcase hung the skin of a Florida porcupine fish and the skull of an African hartebeeste; at the other end, a hornets' nest collected in the Ojibway country up in Canada jostled a stuffed African monkey. A line of tables crowded one wall with their burdens of South Florida tree-snails and other shells, with the skeletonized heads of rattlesnakes, and various fossil specimens. Great portfolios of snake, turtle and tortoise, bird, and flower paintings, representing some of the best Nature art done by Richard F. Deckert of Miami, dominated a corner. Had I never met Dr. Kelly personally, I would have discovered him from these surroundings. Here was the study of a scientist (always but an amateur, as he says) with an omnivorous mind; the setting for a dynamic personality who laments the limitations of the twenty-four hour day.

In his profession, Dr. Kelly has blazed trails during the past fifty years, and his achievements as practitioner, teacher, and experimenter in radium therapy and electrosurgery are part of contemporaneous medical history. He was summoned with Osler, Welch, Halsted, and Henry Hurd to the Johns Hopkins University to form the first faculty and develop the clinical methods and teachings of the new medical school in 1889 and 1893, and in this relation has been a factor in setting its pace and establishing its reputation at home and abroad. His acknowledged prominence as a leading gynecologist and author in the surgical field is almost overshadowed by his renown as the pioneer who, following the initiative of Dr. Robert Abbé, investigated and helped to develop the now rapidly growing field of radium therapy in America. Not surfeited with these lines of professional endeavor, he has written numerous books and maintained an active membership in many medical and scientific organizations. With the enthusiasm of a younger man, this seventy-three year old veteran is now also eagerly promoting the cause of electrosurgery, a new and potent force greatly facilitating and improving a large group of surgical operations.

Active as he is in medicine, however, Dr. Kelly still pursues the hobbies that date from his earliest youth. "As early as I can remember," he says, "I have been a profoundly interested, impressed observer and collector in the realm of Nature, or, as we used to call it, Natural History. My earliest opportunities were in the fields and woods near our Civil War-time home at old Chester, in Delaware County, Pennsylvania, with the insects, snakes, and turtles, and there began my acquaintance with our



CLAUDE C. MATLACK

CAPTURING ANOTHER FINE SPECIMEN

A tree-snail is about to go into the collection bag. Dr. Kelly began his collecting in his early youth

fungi and flowering plants. In my teens, I used now and then to keep poisonous snakes at home, but they developed the reprehensible habit of getting loose and bothering people. Later on, in the early nineties, I had a big diamondback rattler from Florida that bit me on an occasion when I was lecturing about him, so I ceased to have live poisonous ones about." He was also bitten by a large moccasin, captured about five years ago down in Florida in a slough on the Kissimmee prairie. The single puncture of the right index finger caused the whole hand to swell like a pincushion and to bleed all night when it was incised. Recovery took place with no permanent disability beyond the withdrawal by the accident insurance company of their policies. Dr. Kelly was not an ideal risk.

Each spring, Dr. Kelly pulls up stakes and hies him for Florida where he visits all parts of the peninsula and at times goes into the Everglades, last year journeying more than five thousand miles, collecting, studying, identifying. For two years he has visited Utah, to camp and explore in one of the most interesting geologic horizons in the world, in company with Dr. George W. Middleton and under the kindly tutelage of Professor Frederick Pack of the University of Utah. Year by year, too, he escapes into the highlands of Ontario, first visited in the Muskoka region in 1876, long in advance of the summer tourist. Almost regularly since 1891 he has struck out each year for his group of log cabins on the shore of Lake Ahmic in the Parry Sound District, one-hundred and seventy-six miles north of Toronto. Here the family of nine boys and girls has grown up and learned to love the woods, canoeing, swimming, and voyaging out into the wilds. Wherever Dr. Kelly goes in the appropriate seasons, he returns with specimens and fresh knowledge, especially in the field of mycology.

To be able to aid scientific workers now and then and to enjoy the draughts from Nature's many refreshing rills are the prime objectives Dr. Kelly seeks in collecting in her several realms. "I feel that such superficiality needs no apologies, for when I have done my professional work, I claim the privilege of being just as superficial as I choose in any of Dame Nature's fields," he declares. "I have neither the skill nor the will to shine in any non-medical field; it is a sufficient and satisfying reward to assist from time to time younger men who are zealously enlarging the boundaries of our knowledge." In pursuance with such planning, in 1928, he presented his library and collection of fungi to the University of Michigan, under the capable direction of Dr. C. H. Kauffman. This consisted of some two thousand dried specimens of plants and some twelve thousand mycological works, including papers, a vast number of photographs, and three hundred water color paintings that represented some eight years' work by L. C. C. Krieger, artist and excellent mycologist, formerly associated with Harvard University. In this library there was also a magnificent priceless volume of some hundreds of paintings of fungi by De Schweinitz, one of the fathers of American mycology. Dr. Kelly also enjoys assisting students in summer field work.

The enthusiasm of this medical man, embracing all out-of-doors, coupled with a mind enjoying the vastly diverse yet orderly arrangement and beauty of Nature, has resulted in the accumulation of a library of thousands of books, many of them precious volumes on astronomy, geology, mycology, herpetology, entomology, and conchology, as well as works on biography and on the Bible. He is familiar as an amateur with the snakes of the United States and the world at large, and as indicated is well informed on our fleshy fungi. He has stored up considerable geologic lore from books and associations with leading geologists and has a fund of knowledge of insects, shells, flowering plants, and lichens. Astronomy has ever proven an unfailing inspiration since the early impulses imparted by a Nature-loving mother whose copy of Guillemin's large popular work *The Heavens* (still found in second hand book catalogues) was often conned in childhood.

"It is really hard after all to declare offhand which of the many fields of Nature is the most attractive. For most of us naturalists by proclivity, whether amateur or true scientist, there is an inherent irresistible inclination which step by step, often for years undiscovered, finally draws each one to his chosen field. A pure accident seems sometimes to be the determining factor; suddenly the eyes are opened and something never seen before is visualized as a revelation, and a career, little or large,

opens up and is from that illuminating moment carried on, with old Dame Nature acting as the kindly foster mother. Snakes struck my fancy from the first encounters in the years of early childhood, and have held my interest through all the vicissitudes of a busy variegated life. There they are, some two thousand of them, each with characteristic habit: ramping over the tropical savannahs and the seas, burrowing underground, living under loose bark and leaf mold, creeping or, as is the case of our coachwhips, flashing over the surface, climbing trees—sometimes entirely arboreal—and flowing with inimitable grace through the leafy branches like the very breezes, and, again, like the poisonous sea dwellers, dying if kept out of the water. Look at them once more: there at one extreme are the tiny delicate little burrowers, blind and scarce a span long, and at the other, that monstrous long-time mythical anaconda thirty-five feet in length, secured by Vital Brazil on an island out in the mouth of the Amazon River. As to the capabilities of this deformed creature, without hands or feet, I think it was Huxley who said it could do everything but fly; but great scientist that he was, he was mistaken in the exception, for there is an Asiatic snake which like a flying squirrel draws in its abdomen and floats off in the air, parachuting to a distance. No, snakes are rarely of a responsive nature, but what an interesting study: given a rod with a mouth and a vent, what could you or I do with such an idea in the way of creating a vast number of interesting varieties? Mighty little, indeed, but the hand that fashions Nature can thrill you with interest over all it accomplishes.

"The same is true of fungi—mushrooms, toadstools, and their ilk. The groundwork idea is that of a parasol and nothing more: a stalk lifting it from the ground and a veil to cover it until mature and a shade to protect the developing spores. But lo, what an infinite variety! What marvels of provision for disseminating their spores! It was just a little toadstool which gave me the greatest thrill I have ever experienced in the field of Nature. I wish I could communicate it in the telling. It was not its size, for it was only about an inch tall, growing on an island near my camp, looking at first sight like an ordinary fungus; its beauty lay in the exquisite amethystine luminosity of the numerous translucent mycelial threads enveloping its lower stem, like beauty so often evanescent, for it faded in an hour or two after picking. And where, for example, can we find colors more glorious than in many of our fungi?

"Then pass to the other extreme, to think of the largeness as well as the smallness of Nature and note in things small and great all that elevates and glorifies.

"Geology brings a realization and visualization of vast stretches of time through vast eras of the unceasing makings, unmakings, and remakings of Nature—mountains, rivers, plains, and seas in endless succession, from the varves of the recent glacial periods back through the Tertiary, the Mesozoic, to the Paleozoic, Cambrian, and its age-long antecedents: some three billion years, but who of us can visualize even a million? I go to great assemblages in our stadia not to see the baseball and the football but simply to enlarge my ability to conceive of fifty thousand, a hundred thousand, and then, multiplying the area ten or twenty times, of a million and beyond.

"And astronomy. Oh, the sad loss to him who knows no astronomy! Geology for its ages upon ages of time, but astronomy for vast incomprehensible distances. Here the mind lingers in its effort to grasp the millions and millions of miles embraced by the light years of distance, to comprehend the distances of our own solar system, of the nearest fixed stars, and then leaps across to such another vast universe as that we call Andromeda, at first a 'nebula,' but resolved by the newer and greater telescopes as another universe of stars like our own, about a million light years distant. And those globular clusters among which Harlow Shapley has made such astounding discoveries, some two hundred added universes. We make our puny efforts to form some faint conception of astronomical distances, and we have to admit humbly that we cannot even begin to comprehend the speed at which light, the fundamental unit of measure, travels in one second. And yet the astronomer comes far, far nearer in his attitude of mind than any average man who has not lived in these vast verities. Such are some of the strong drawings of Nature, which is, after all, but finite."

The love of all out-of-doors naturally engenders labors in behalf of conservation and some years ago, Dr. Kelly bought Rock Spring in Orange County, Florida, the most beautiful spring in the State, situated out in the open pine, hickory, palm, and oak woods, pouring out from a deep cave its 25,000 gallons of cool sweet water every minute, day and night. This was later presented to the County for the benefit of the many who knew and loved it, as a bird and animal sanctuary. It is officially designated the Howard A. Kelly Park, the doctor insisting on the preservation of the original name for the spring itself. Some two hundred of our naturally shy wild turkeys raised there in the forest vastnesses come daily to the lodge for food, adults and their young broods in season. The doctor is an eager promoter with Representative Ruth Bryan Owen and Ernest F. Coe and others of the proposed Tropic Everglades National Park. Recently, to convince a Congressional Committee of the suitability of this project, he exhibited his pet snake from the great Esmeralda Swamp in Florida to the members so they might see an animal destructive to the rattlesnake tribe. It is worthy of note that Mrs. Owen at once ventured to pick it up and put the harmless reptile around her neck, although she had never handled one before.

Dr. Kelly's zeal as an amateur naturalist has been recognized by the University of Michigan in making him honorary curator of amphibians and reptiles. He has been elected to membership in a number of societies in various parts of the world. But it is not for honors that in every spare moment he turns to Nature, but rather because there is found an endless nourishment and refreshment for a tired mind in mysteries ever being solved and precious moral lessons learned in Nature's abounding parables, affording satisfaction, keen pleasure, and enjoyment, and especially adding meaning and beauty to one's very life.

ENEMY OF TURTLES AND FRIEND OF MAN
Old Dragonhead, this twelve-foot alligator, saves thousands of fish by feasting on the chelonians

THE FISHERMAN'S FRIEND

HOW THE ALLIGATOR HELPS TO MAINTAIN THE FISH SUPPLY

BY GEORGE L. BIRD

TO DESTROY the alligators that inhabit the southern swamps is to damage seriously the supply of game fish. This statement should not be made, of course, without proof, but plenary evidence is quickly forthcoming from those who have studied southern waters and have watched the fish grow fewer, despite the dumping of thousands of fingerlings by state fish hatcheries.

FISHERMEN HAVE A NAME FOR IT
But not necessarily laudatory. The "cooter" or soft-shelled turtle kills large numbers of fish

Coincident with this proved decrease in fish population there has been a noticeable increase in the numbers of turtles and a rapid decrease in the numbers of alligators in the same waters. And first of the curious facts to be noticed in the study of the problem is the enthusiasm with which fish, alligators and turtles prey on each other. Turtles feed on the spawn and young of the bass, which is the principal game fish of the south, and also take young alligators. The alligators eat the turtle and the bass, while the large bass occasionally take the young alligators and turtles.

If it can be shown, however, that the turtle destroys worthwhile quantities of fish and that the alligator keeps the turtle in check without destroying more fish than it saves, then the picturesque, ugly-faced old reptile has proved his right to protection by conservationists and sportsmen.

Evidence that the turtle is a destroyer of fish is easily found and indisputable. Times almost without number the soft-shelled turtle, called "cooter," has been caught upon live bait. I refer to the use of bait that is alive and able to swim about so that a turtle must pursue it to effect a capture. The "cooter" is largely a meat eater and is an efficient scavenger.

A few months ago, in Carleton Lake, Putnam County, Florida, I found a nine-pound black bass being devoured by "cooters" while the bass, still alive, floated on the surface, struggling weakly. Save where the turtles were attacking, there were no marks of any kind upon it.

Further proof of the slaughter of fish by turtles comes from I. T. Quinn, Alabama game commissioner, who says that "there is much evidence in this state that turtles destroy the spawn and also the fingerlings of many species (of fish). We have considerable trouble at the

A SADLY-TORN VICTIM OF THE "COOTER"
Gruesome, yet realistic and therefore effective evidence of turtle activity. This nine-pound black bass was still alive when found

Alabama State Fish Hatchery with turtles feeding on fingerlings in rearing ponds." Similar reports come to me from officials in Arkansas, Florida, and South Carolina.

The "cooter," when it frequents the "brim" beds, devours the spawn of the bream almost unmolested. It has more difficulty, however, in feeding upon the spawn of the bass. Both fish will attack it, but without a great deal of success.

Questioning among old fishermen elicits information that varieties other than the "cooter" also feed upon the spawning beds. Many experienced observers have frequently seen the other soft-shelled turtles feeding upon them. Some species of turtles, it is true, are vegetarian, such as the "stripped-legged turtle," but whether these also feed upon fish spawn, I am unable to say.

PART OF THE TURTLE MEAL
These pieces of carapace were taken from the stomachs of five 'gators

The second phase of the problem involves the importance of fish in the diet of the alligator. Fish are probably not the factor believed heretofore. One old 'gator hunter in Melrose, Florida, who has killed hundreds of 'gators over a period of forty years and who has examined the stomachs of scores of alligators, declares unqualifiedly that many of them had garfish in them, but that only a very few contained bass or "brim." Garfish are notorious destroyers of spawn and young fish; furthermore, they are unfit for food. Other fish found in the 'gator's stomach were mudfish and "silver sides," the first inedible and the second used only as live bait or as food by other fish.

Authoritative word from the U. S. Bureau of Biological Survey, which examined the stomachs of 149 alligators, states that fishes formed 14.04 per cent of the total food eaten during spring, summer, and fall months. A part of this, however, was made up of alligator gars, which, the Bureau says, "are a nuisance so far as man is concerned." The alligator eats little during the winter months, except in southern Florida where it does not always hibernate.

It must be remembered that the feeding habits of the alligator vary widely with the season and with the food available. In general it can be said that the 'gator will eat whatever is easiest to procure. A list published by the Bureau of Biological Survey shows that practically everything in the form of insect or animal life is readily devoured.

The really vital question is—does the alligator feast on the turtle? The answer is unqualifiedly "yes," if based on a yearly survey of many waters. Abner Hinant, the Melrose hunter already mentioned, reports that he has found as many as six turtles in one stomach, all in such condition as to indicate they had formed a single meal. He further reports that it is no uncommon thing to find from two to six turtles in the stomach of 'gators that range from five feet upwards in size.

The Bureau of Biological Survey reports that "in the case of six alligators ranging from five to eight feet nine inches, killed during the month of June, turtles comprised *68 per cent* and fishes *32 per cent* of the stomach contents." The Bureau further says, "the late J. D. Mitchell was of the opinion that the principal food of adult alligators is gars and hard-shelled turtles." Mr. Mitchell is reported to have cut open numerous alligators and "in almost every instance found the remains of one or the other, or of both."

One of the accompanying photographs shows pieces of shell, some containing eight or nine square inches, that have been taken from five-foot or bigger alligators. The collection came from the stomachs of only five alligators.

The significance of these facts is clear. Several varieties of turtles are constant marauders of the spawn beds of the game fish. They also devour quantities of the young fish. The first of these is the more important, for where a turtle would satisfy its appetite with a few fish, it may rifle the entire spawn of a bream or bass and so destroy thousands of potential fish.

The situation in Lake Brooklyn, in Clay County, Florida, will serve to show what is happening. Ten years ago it was a splendid lake to fish and supported a few alligators and but a small number of turtles. A small town sprang up nearby, and the 'gators were killed off. Today there are few fish, no 'gators, and thousands of

turtles. Yet on Lake Geneva, half a mile away, where a few 'gators have managed to exist because of excellent natural cover, there are relatively few turtles and still good fishing. Yet three times as much fishing has always been done on Lake Geneva as on Lake Brooklyn.

It is possible to cite a score of lakes, all of which show similar conditions. Three tendencies may be noted in all of them: fewer alligators, more turtles, and a decreasing supply of fish.

WHERE 'GATORS AND THEIR FOOD ABOUND

A typical southern swamp which breeds both friend and enemy of fish. The huge reptiles need protection badly today

Now it is true that the alligator eats fish, but the facts show that most of these fish are harmful or worthless so far as man is concerned. But so far as I can learn, there is nothing to show that the alligator attacks fish spawn. That is a charge which would be difficult to prove, however, for the gelatinous spawn would not long remain in the stomach of the alligator. On the other hand it cannot be doubted that the alligator is a constant destroyer of several varieties of turtles, some of which are manifestly and proven to be enemies of the spawn and the young of the fish.

It would seem reasonable to infer from these facts that the alligator is of economic benefit to the fisherman. It only remains to determine the exact importance of the saurian in its native haunts as a balance-keeper. To me it seems clear that it has an important rôle to play, and it is past time for the southern states to undertake to settle the matter for their own benefit and for that of the thousands of winter tourists who come to hunt and fish.

But until the exact status of the alligator is determined, the remnant of his kind should be protected. At present, of the nine states in which it is found, Florida is the only state to offer any direct protection, and that only in a few counties. Louisiana sets an open season, but it has no *closed* season. There is no state-wide protection anywhere. Mississippi's counties may protect, but I am unable to find any that do. So that at present the ranks of the alligator are dwindling rapidly throughout the South, save in a few isolated regions where hunters are scarce and where their haunts are inaccessible. It is not too much to say that the next decade will see the complete extermination of the alligator in all but a few of the most remote regions unless action is soon taken to protect the thinning ranks. Does he not deserve a better fate?

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A HANGING GARDEN

IT SUPPORTS MANY PLANTS

BY IRVING BRANT

ON THIS fallen Douglas fir, one end on shore, the other submerged for a hundred feet beneath the waters of Sproat Lake, Vancouver Island, floats a miniature forest of hemlock, fir, giant cedar, broad-leafed maple and alder. Wax myrtle and ninebark furnish the undergrowth, while brilliant fireweed gives flashing color.

This garden is nurtured with moisture drawn by capillary attraction from the lake, and as the lake rises and falls the log has a wet and dry season governed by the angle at which the log tilts. Over a dozen varieties of small plants, ranging from mosses floating at the water's edge to grasses of the high, arid ridges, are all brought within the compass of a climate artificially produced by the tilting of the log.

When the photograph was taken, two years ago, the tallest tree was an eight-foot Douglas fir, indicating remarkable lasting power in a habitat exposed to winds from thirteen miles of open water. But those who search for it today will probably search in vain.

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A RARE BEAUTY FROM THE EAST

The six enormous petals of Iris kaempferi, from Japan, combine with its gorgeous colors to create one of the finest blooms

ALL PHOTOGRAPHS BY J. HORACE MCFARLAND COMPANY

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IRIS POTPOURRI ...

BY ROMAINE B. WARE

NO OTHER genus of the floral world possesses such garden possibilities as the varied iris family. No other group offers as wide a range of color, as diverse a type of growth or as simple a culture under all soil and garden conditions. Nor does any other bloom even approach the iris in diversity of foliage and flowering heights. There are tiny dwarf irises only three inches tall and others with towering bloom stalks reaching five feet and more above the ground. Some flowers are but the size of a quarter while others measure nine inches from the uppermost point of their standards to the lower edge of their falls.

Their greatest claim to universal garden importance, however, lies in their long blooming season. Throughout mild sections, south of Washington, D. C., and even further north with protection, the variety *Stylosa speciosa* (*Unguicularis*), a wild Algerian species, blooms from December to April. The dwarfs then take up the parade, followed by the intermediates and later by the enormous class of tall bearded varieties. These are in turn pursued, during late June and July, by the gorgeous Japanese iris, *kaempferi,* which draws the main iris display to a close. Moreover, there is now being developed a group of fall blooming irises and some that are virtually everblooming, so irises will soon last all the year. Two of the new dwarf bearded irises from France, Jean Siret and Snow. de Lieut.

• • •

A TYPE APART
The bulbous irises differ from the others both in their grass-like foliage and their root growth. They are used for forcing for winter decoration

Chavagnac, are reported to have bloomed intermittently in a Long Island garden up to December.

The iris has long been featured in poetry. Dante, Chaucer, Spencer, Milton, Tennyson, Thoreau and a score of others all pay homage to its beauty and charm, and modern poets still find it a subject for their lays. Susan O. Moberly writes thus of the Japanese iris:

In their gowns of crinkled silk,
Golden-banded, ranked in order,
Black as bull's blood, white as milk,
Stand within our garden border
Troops of Iris.

Pliny, nearly two thousand years ago, wrote that "iris" is the Egyptian for "eye", the name Iris signifying "Eye of Heaven". In Greek the word "iris" means "rainbow" and in classic mythology, Iris, the rainbow personified, was a minor goddess, messenger of the goddess Juno, of whom Homer, as translated by Chapman, writes in the Iliad:

". . . . And Iris thus replies
'I come, Pelides! from the queen of Jove,
The immortal empress of the realms above'."

SHOWY JAPANESE
For waterside planting, these Nipponese beauties are unexcelled. They are easy to grow and care for throughout the year

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IRIS MAKES A DELIGHTFUL CUT FLOWER

Its airy grace and brilliant color lend vivacity to any room. Only the bulbous varieties, however, are cut commercially, as they alone pack well

Iris is said to be the "Fleur-de-lis" from which comes the golden device on the flag of royal France. It has been variously called the "Poor Man's Orchid" and "Orchid of the North". Joseph Pitton de Tournefort, a French botanist of the seventeenth century, suggested the name "Rainbow Flower" and Ruskin writes of the iris as the "Flower of Chivalry", with "a sword for its leaf, and a lily for its heart".

It remained, however, for the present century to recognize more completely the latent possibilities of iris. Plant explorers and collectors have brought together a varied assortment numbering some one hundred and fifty species from the far corners of the northern hemisphere (as in the case of the lily, no species has been found native south of the equator). From these and the cultivated plants of our ancestral gardens the present day galaxy has been developed. Almost every shade and tone of the spectrum is represented among modern plants and recent productions of the hybridizers are a far cry from the "flags" of our grandmothers' gardens.

It is a lamentable fact that so few from the rank and file of amateur gardeners have awakened to the vast improvement made in these flowers. You can visit garden after garden and find nothing but the purple Black Prince, the white *Florentina alba* and the yellow and maroon *Honorabilis*. To depend on these when there are so many better types at very low prices is like relying upon horse and buggy transportation just because you have always done so. Our gardens should be kept up to date. Antiquated and inferior garden subjects should be discarded as promptly as out-of-date clothing.

It makes no difference under what conditions you garden, there are irises you can grow. In sand, gravel or clay, in rich loam or upon rocky, sun-baked hilltops, some kinds of irises will make themselves at home. Our Japanese cousins grow the species *Iris tectorum* upon the thatched roofs of their houses.

The recent tremendous growth of interest in rock gardens has resulted in a large demand for irises suitable for such planting. Naturally the dwarfish types are most desirable for this purpose. I find more than eighty varieties ranging in height from three inches upwards offered in the catalogs. Most of them are less than a foot tall. Not only do these plants produce wonderful masses of color but they bloom very early, when color is especially welcome. They will thrive in almost any soil, although they require usually plenty of sunshine. Two of the dwarf beardless irises, *verna* and *graminea*, like partial shade, however. The latter is one of the few irises that bloom well

even in dense shade. Another dwarf, especially desirable for rock gardening, is the dainty amethyst, blue-crested *cristata.* This likes semi-shade and a leaf mold soil. A white form has been developed but it is rather expensive as yet.

The tiniest rock garden iris is *lacustris* of the *I. evansia* group which is closely related to *cristata.* This variety grows but three inches tall and is native to the moist sandy beaches of Lake Michigan. The color is a deeper blue than *cristata.* Another group that is useful in the rock garden is the intermediate. It blooms after the dwarfs and ahead of the tall bearded varieties. The plants range in height from twelve to twenty-four inches. The entire group of dwarfs has not yet had such attention from the hybridizers as has been bestowed upon the tall bearded type, but it has great possibilities. The new iris, William Mohr, claimed by some to be America's most sensational iris, comes within the dwarf category, though it is somewhat taller than the rest. It is a product of the late William Mohr of California, one of the world's foremost iris hybridizers. Due to its high quality as well as scarcity and demand, it has been rather high in price, but I note one grower offering it at $2.50 in his 1931 price list. At this price many iris "fans" will order it.

"SOUVENIR DE LOETITIA MICHAUD"
A recent creation over which iris growers are still exclaiming. It represents the modern iris development

A QUALITY IRIS THAT IS INEXPENSIVE
Mlle. Schwartz sells three for eighty cents, yet is one of the best products of the hybridizer's art

It is the enormous class known as "tall bearded" that has given iris its main line of development. Literally thousands of varieties have been grown and introduced. Many of them have passed into oblivion but today there are several hundred very choice types that one may select. A current catalog lists well over thirteen hundred varieties and has attempted to select the best one hundred

of them. Of course most of them are new and scarce and consequently high priced, but about one-fifth of those listed may be bought at less than a dollar each. Of three hundred types ranked as better than the rest, about one hundred and thirty, or a bit less than half, are priced at a dollar or under. Some of them cost as high as thirty-five dollars and more. Prices vary greatly, depending upon the stock and the opinion of the grower as to the value of the variety.

It would be quite impossible in this short article to list a complete, representative collection because there are too many worthy ones. I'll just mention a group of twenty-four that are very high grade and still reasonable in price: Ambassadeur, Asia, Bandallero, B. Y. Morrison, Carcanet, Dream, Flammenschwert, Folkwang, Gold Imperial, Imperator, Lent A. Williamson, Maori Princess, Mlle. Schwartz, Moonlight, Palemon, Opera, Princess Beatrice, Princess Osra, Ramona, Rheintraube, Souv. de M. Gaudichau, Susan Bliss, Taj Mahal, and True Charm.

PLANT YOUR IRIS FOR MASS EFFECT

Here a background of flowering shrubs sets off the brilliant blooms. Row planting is undesirable. Iris gardens are gaining in popularity

These would be an excellent start towards a worthwhile collection. One catalog of a prominent specialist prices the entire lot at less than twelve dollars, while other growers may ask twice as much.

If money is no object and you wish some of the very choicest, most recent and most unusual developments you will include a few of the following, the cost of which will probably run between one and two hundred dollars:

Blue Velvet, Duchess Sarah, Frieda Mohr, Labor, Michelline Chairraire, Mrs. Valerie West, *Numa rumestan*, Pluie D'Or, Sir Michael, Souv. de L. Michaud, William Mohr, William R. Dykes.

These are irises for the hybridizers who naturally desire the finest available kinds, because like other highly developed species, blood will tell, and only the experimenter producing the very best has a chance in the race for perfection today. Incidentally, America has made wonderful progress in the past twenty years and now holds the leadership in the field, but only by constant effort can it maintain its rank. The French and English growers are past-masters in the hybridizers' art and worthy competitors at all times.

Most authorities agree that July and August are the best months for planting because at this season iris plants are upon the threshold of growth for the coming year. During both the early spring and the fall active growth is taking place and plants disturbed at these times are retarded in their progress. Many varieties, however, may be transplanted with safety at any time that they are not in flower. All experts trim off the leaves to a length of five or six inches, and you should do the same when dividing and transplanting your roots. Cutting the leaves aids the plant in recovering from the root disturbance and loss of feeding rootlets, and gives it vigor.

In our gardens iris may be arranged in many ways. The dwarf and intermediate types may be planted toward the front of the border, using the most dwarfish for edging. Planting in rows is not considered as good taste as grouping in masses. Three, five or a dozen plants of a kind make a better showing in the hardy border than single specimens, though occasionally an individual plant is very decorative. There are many schemes of grouping iris in the garden, either massing the different varieties for pleasing color combinations or working them in with other material that blooms at the same time.

The tall bearded iris which forms the great mass of our varieties is useful throughout all parts of the border. And it may be combined with other types to make a garden planted exclusively with iris. Many such gardens have been created; one I know is designated "Iris Potpourri", meaning a medley or mixture. Another very beautiful garden is known as (Continued on page 125)

ACME P. & A. PHOTO

THE PRESIDENT PLANTS HIS BI-CENTENNIAL TREE

To honor George Washington Mr. Hoover places the earth around the roots of an American Elm in the grounds of the White House, thus becoming a member of the tree-planting army. On the left is Percival S. Ridsdale, a director of the American Tree Association, and at the flag is R. T. Edwards, director of the educational section and author of this article

GEORGE WASHINGTON TREE-PLANTERS ALL

FROM PRESIDENT TO SCHOOLBOY, ALL AMERICANS ARE HONORING FIRST LEADER

BY RUSSELL T. EDWARDS

WHEN Herbert Hoover, thirty-first president of the United States, planted an elm in the White House grounds on April 21 in the name of George Washington, he had as precedent for his action just 1,952,670 similar plantings, all made as part of the Bi-Centennial Tree-planting program inaugurated by the American Tree Association. And since he received from the Association the buff and blue certificate marking his enrollment with those who have paid their respects in this novel manner to the First President, nearly two million more trees have been set in the ground, to be dedicated on February 22, 1932, the second hundredth anniversary of Washington's birth.

Thus is the citizenry responding to the call to honor a national hero as no hero has been honored before. It is estimated that more than 10,000,000 living, growing memorials will have been erected to the Father of his Country before the end of 1932, the Bi-Centennial year.

Hardly a little red school house far from the cities and hardly a civic organization immersed in affairs of business have failed to plan for a Washington tree memorial. The governors of many

TREE-PLANTING BOOK FOR YOU

Now is the time to write to Charles Lathrop Pack, President of The American Tree Association, 1214 Sixteenth Street, Washington, D. C. and ask for a tree-planting book. Make your plans to plant a tree in memory of George Washington this Fall. Nature Magazine has arranged for you to get the tree-planting suggestions at once. The demand will be tremendous when school opens and the tree-planting season begins. Your name will go on the Association's national honor roll when you have planted your trees. Get others to plant and by all means report the number of trees planted to The American Tree Association.

TUPPER PHOTO

VETERAN AND YOUTH PLACE THEIR TREES

At Lakewood, N. J., Charles Lathrop Pack, president of the American Tree Association, congratulates "Uncle David" Mathews, 93 years old G. A. R. veteran, on his tree-planting. Below the '32 bi-centennial class at Keuka College plants a thousand trees in honor of George Washington near the Iroquois Indian Longhouse

states, following the lead of John Garland Pollard of Virginia, have wielded the spade to set out trees on executive mansion grounds. In Grand Rapids, Michigan, 12,000 trees, dedicated to the revolutionary war leader, mark the start of a George Washington town forest which eventually will have 50,000 or 60,000 trees, and this city is rivalled by Hibbing, Minnesota, Laona, Wisconsin, Jamestown, New York and many other places. Every school in Ocean County, New Jersey, has registered a planting with the American Tree Association, and the schools of Schuylkill County, Pennsylvania, have 13,000 seedlings in the ground. Women's Clubs, with the example of tree-planting Mrs. John F. Sippel, their Federation President, before them, have laid aside their manifold duties to perform a patriotic service the nation will long remember. From Alaska, where hundreds of trees are already set out, to Florida, where the clubs are placing a Washington tree in each school yard of the state, the women's organizations are honoring Washington.

Colleges—among them Keuka, Oberlin and Trinity—have made tree-planting a part of their programs, and many other colleges have had plantings by graduating classes. The Daughters of the American Revolution are, of course, particularly inspired to pay their respects to the man who led their ancestors to battle. And besides these groups, hundreds of individuals in all walks of life are adding to the forest store by erecting one or more leafy monuments to America's foremost citizen.

The Bi-Centennial Tree-Planting program, in which every American is invited to take part, originated in the forest-thinking brain of Charles Lathrop Pack, president of the American Tree Association, late in 1930. Years of study of forest problems and of the 100,000,000 cut-over acres in the United States have convinced Mr. Pack that trees are vitally needed by this country, and that he

who plants a tree is performing a service as truly patriotic as those of another generation who manned the bulwarks at Bunker Hill. If the nation will save the trees, he has said, the trees will save the nation. Millions of dollars are wasted each year by erosion that the forests would prevent; a timber shortage lies ahead; the hundreds of industries dependent on wood are threatened. America cannot be a self-sufficient nation, as Washington planned it to be, unless it replenishes its depleted forest store.

TUPPER

TREE ON AMERICAN UNIVERSITY CAMPUS

Bi-centennial tree-planting ceremony at the high school in Lakewood, N. J. which inaugurated the great Ocean County program. Below the National Society of New England Women plants at American University in Washington. Left to right: Brook Bright '32, Mrs. Clara Coe Bryne, Dean Woods, Olive Rodgers '32, Chancellor Clark

Aside from their economic aspects, trees, Mr. Pack believes, have a symbolism and a patriotic significance which should make every citizen proud to set them in the ground. With their roots firmly in the native soil, and with their leafy thickness dispensing beneficent shade and protection, they represent this nation better than any other symbol. Not static, but growing, reaching higher and higher; not dead, but living; not only useful and necessary, but beautiful as few other objects are beautiful, they represent all the idealistic concepts of this Union. But more than this, they express the spirit of Washington; like him, they live through the centuries, stalwart, steadfast, withstanding every blast. What pillar of cold stone or statue of gray granite could better serve as a memorial to the great leader? And in what better way could a citizen, whether child or man or woman,

NATIONAL PHOTO

show gratitude to and affection for Washington than by placing in the earth with his or her own hands a straight-growing sapling which will dispense beauty and symbolize national greatness and strength through the centuries?

Mr. Pack's idea won instant approval of the Bi-Centennial Commission, in charge of the country-wide celebration to take place in 1932. The American Tree Association agreed to encourage the plantings, to send suggestions for patriotic tree-planting and dedicatory programs to any citizen desiring them, to distribute booklets containing tree-planting directions, and to enroll all those who plant for Washington on the national honor roll. It is sending to each planter a special certificate similar to that given President Hoover and to those given to the Governors who have planted trees.

MILE HIGH PHOTO

COLORADO HONORS FIRST PRESIDENT

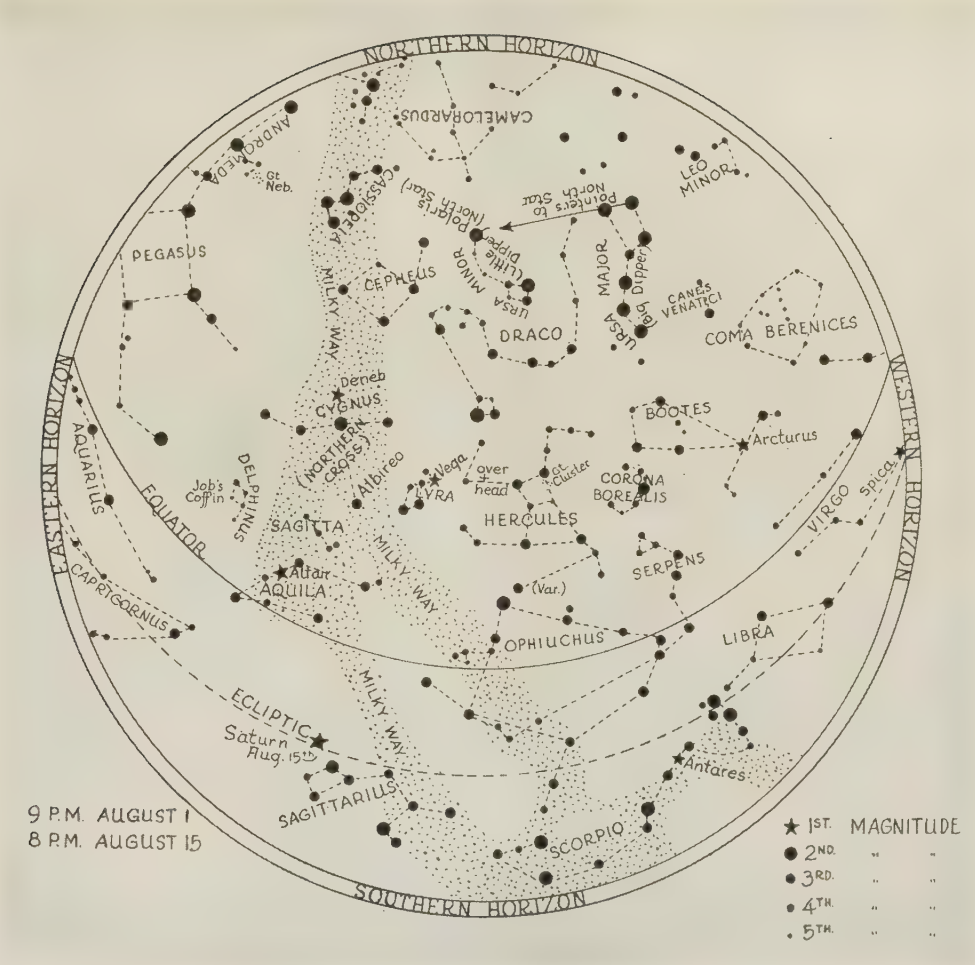
On the state capitol grounds the State Federation of Women's Clubs marks the bi-centennial. A. P. Adourel, with spade, represented Gov. Adams

Signs that the Bi-Centennial program is already fostering patriotism and citizenship are legion, and some of the letters to the American Tree Association that accompany requests for the tree-planting booklet bespeak eloquently how deep love of country can go. The Indiana School for the Blind, the students of which will never see the beauty they created, planted forty trees. In South Dakota the pupils of the Rosebud Indian Agency school, whose parents had for years been denied citizenship, wanted to honor their pale-face Father. Fletcher H. Bushman, who lives not far from Cincinnati, and whose grandfather was but eight when the Battle of Lexington turned a new page in history, planted his Bi-Centennial trees on Armistice Day, 1930. These trees stand near a tree he planted from seed in 1876—for Mr. Bushman has been planting trees for the last sixty of his 76 years—and are but dwarfs beside this monarch with its eight-foot girth and its spread of 150 feet. Mr. Bushman, of course, will never see his 1930 plantings reach the grandeur of their companion—but others will and will thank him for the handsome picture they will make. The trees will not only be memorials to Washington; they will proclaim the citizenship and patriotism of the planter, and be monuments to his fine qualities.

The tree-army, mobilized by the spirit of Washington, is on the march, a great fraternity of American citizens bound by a common purpose—tribute to the first Commander in Chief. The terms of enlistment are simple; plant a tree, and send attested word of it to the American Tree Association, Washington, D. C. But be more than a private in the ranks; be an officer, and organize within your school, club or circle of friendship a platoon of planters. The Tree Association will help with advice, as will the state and national forest services and highway departments.

When a quarter of a century passes, think of the gratefulness of the nation for the millions of trees, in school yard, in school forest, along highway, in town woodlands. Imagine, if you will, the school children of today, now become men and women, reuniting beneath the symbols of patriotism they set out with their own hands. Imagine, too, your own pride when your George Washington tree is a thing of perfection, exciting comment from every passerby, and those who stop beneath it bless you for its shade. After all, it is little enough to do for the man who led this country through darkness into light and for the nation that needs the trees; and the joy it will give in the future, the new concept of citizenship and country it will create, and the wealth of grace and loveliness it will add to the land in which you live will be in themselves full rewards for the small labor involved.

"Planting a tree to honor the memory of George Washington is a fitting tribute to the man who won our independence and established our nation. I hope that the year of the celebration of the Two Hundredth Anniversary of the birth of George Washington will witness the dedication, in every part of these United States, to this great man, of millions of these living monuments—trees, registered on the honor roll of the American Tree Association and planted in appreciation and reverence for the Father of our Country. In planting trees to his memory, there is also planted with them all that trees meant to this great man—the combined attributes of honest, loyal service that means immortality."—Mrs. John Dickinson Sherman of the Washington Bi-Centennial Commission.



To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

METEORS AND THE MILKY WAY

THESE ARE THE INTERESTING FEATURES OF THE AUGUST SKIES

BY ISABEL M. LEWIS

FORTUNATE indeed it is for sky-watchers that August is warm and balmy and is also the month for leaving the night-blurring glare of the cities for the out-of-doors, for during this month the heavens have a brilliance and interest hardly equalled at any other time of the year. It is the time when the Milky Way, that streaming scarf of light which mystifies and exhilarates, is at its best, and when the Perseids, those wandering bands of dust-particles which annually visit the earth, return to streak their points of light across the face of the darkness. For those to whom August will bring the opportunity to gaze skyward from the vantage point of some mountain peak or from some sandy lake or sea shore, the heavens have prepared a display before which Fourth-of-July pyrotechnics pale.

Ever since 811 A.D., when the Perseids were noted for the first time, man has been turning his eye skyward during August to watch this annual meteor fall. For centuries he did not know what he was watching, and perhaps viewed the heavenly display with fear and foreboding, in the manner of Caesar's wife; but now he views it for its peculiar beauty and astronomical significance, and knows it can neither improve nor make harder his lot.

In foreign countries, the Perseids are popularly called "the tears of St. Lawrence", because they appear in greatest numbers about August 10, the day sacred to that saint; but there are few August nights in which they cannot be seen,—yellowish, sluggish moving bodies sweeping great arcs in the sky from the direction of Perseus. There are three main swarms, the Alpha and Beta, which do their best about August 16, the Epsilon Per-

seids, whose appearance usually is in September, and, lastly, the group which is so conspicuous as to earn the inclusive title of the Perseids and which moves in the orbit of the great comet of 1862, Tuttle's Comet. This group appears about August 12-13 and it is seen in largest numbers about the hour of midnight when Perseus is high in the heavens.

Meteors, or "shooting stars" are mere grains of dust which are heated to incandescence by the friction produced by their encounters with the earth's atmosphere. Slowly moving meteors are reddish while meteors traveling at high velocity leave vivid, bluish-green trails. The Perseids are yellowish because they move with medium velocity. Many of the most pronounced and well-identified swarms are following in the orbits of periodic comets and are simply the particles scattered by them as they slowly disintegrate. These particles weigh, individually, only a few grains at most. Occasionally larger masses, such as fire-balls and meteorites, enter the earth's atmosphere, and these may weigh ounces, pounds or even tons. Due to their greater size they are not consumed by friction but after a noisy and brilliant display attended usually by one or more explosions they fall to the earth. The appearance of fire-balls in the midst of periodic swarms of meteors such as the Perseids is very rare and it is probable that they have a different origin. Meteors and shooting stars that appear in swarms come as silently as snow flakes and are gone almost before we have time to exclaim at their appearance.

Moonlight nights are not favorable for the observation of meteors. Choose rather a clear, dark night when there is no moon and find a place of observation far removed from artificial lights.

It is also on just such clear, dark and moonless nights, far from the glare of city lights, that one will see the Milky Way in all its splendor streaming from Cassiopeia in the northeast, through Cepheus to the beautiful Northern Cross in Cygnus, which now rides high in the east. Here it divides into two nearly parallel branches which meet again in Scorpio. One branch passes through Aquila and Sagittarius, the other through Ophiuchus. The portion of this great, irregular, luminous belt that is visible in August is much more brilliant than the portion in Auriga, Gemini and Monoceros in the opposite part of the sky that is above the horizon in midwinter. The average brightness of the Milky Way has been estimated to be somewhat less than twice that of the sky distant from it but it varies greatly in the brilliance of different parts. It is composed almost entirely of stars too faint to be visible to the naked eye but producing by their blended light a luminous background. There are certain patches known as star clouds which, when photographed through powerful telescopes, show countless tiny points of light. Each point is a brilliant sun, densely packed in with its neighbors much like a finely-divided particle of snow in a driving blizzard.

Among the Northern and Arctic races, in Scandinavia and Siberia, the Milky Way is known widely as the Winter Way and the Winter Street and a Norwegian writer tells how the people predict from the appearance of the Winter Way how many snow storms might be expected! It is also an old custom, the same writer says, to suggest to guests who had stayed too long that they go out and look at the Milky Way. Thus where we might "show some one the door" the Scandinavian would "show him the Winter Way." In the folklore of all nations the Milky Way is the path by which those who have died have passed to Heaven. It is variously called the Pathway of Souls, the Road of Hosts, Jacob's Ladder, and The Paradise Ladder.

The astronomer's conception of the Milky Way is by far the most impressive and awe-inspiring of all notions, for he sees in it the great fundamental plan of the universe. Our sun with its retinue of planets is but one of the countless suns of the Milky Way. Within it, in the star clouds of Sagittarius, lies the center of our universe, the astronomer believes, and by the universe he means that great system of stars that includes the vast majority of all suns to be seen either visually or by telescope. It is toward the central plane of this great Milky Way, or Galaxy, that the stars crowd in a lens- or watch-shaped formation.

Outside of and far beyond the Milky Way system are to be found the Magellanic Clouds, which are approximately one hundred thousand light years distant, and the globular star clusters, whose distances are measured by tens of thousands of light years. More distant even than these are the great spiral nebulae or island universes. Some of the spirals are at distances of millions of light years from us. Magellanic Clouds, globular clusters, and spiral nebulae are all composed individually of hundreds of thousands of stars many of which are far more brilliant than our own sun and these objects are comparable, therefore, to our own Milky Way system in size and importance. Our Milky Way may be, indeed, a great island universe in itself, an enormous spiral nebula with its spiral arms composed of countless suns, ceaselessly milling back and forth in obedience to the laws of motion that govern them.

In the Milky Way we find not only countless stars, giants and dwarfs, but great gaseous nebulae such as the Great Orion Nebula, and great moving star clusters such as the Hyades, the Pleiades and the Ursa Major group. Then, too, there are vast, dark, nebulous regions. The dark rift in the Milky Way between Cygnus and Scorpio, now visible in the evening sky, is the greatest of these dark nebulae and consists, it is believed, of finely-divided, non-luminous, cosmic-dust particles which absorb the light from regions beyond.

Throughout this band of light there are dark "holes" and "coal-sacks" and dark patches, lanes and streaks. These are particularly noticeable in the vicinity of the Southern Cross, in the great southern constellation of Argo Navis and in the midst of the star clouds in Scorpio and Sagittarius. They are particularly conspicuous when seen projected against the brilliant star clouds. When it is viewed through the telescope or as seen in the many remarkable photographs of the Milky Way taken with

powerful reflectors, the great brilliancy and diversity of form and structure of the Milky Way fill one with awe and admiration. Truly here more than anywhere else in the heavens we are confronted with a grandeur of conception and execution that leaves us spellbound.

Hercules is now nearly overhead, flanked by Corona Borealis, the Northern Crown and Boötes on the west, and Lyra and Cygnus on the east. Draco is now particularly noticeable on the meridian, due north. The Dragon's head lies beneath the foot of Hercules and his tail between the Pointers of the Big Dipper and Polaris. In the south are Scorpio and Sagittarius, two of the finest zodiacal constellations in the sky.

There are few stars of first magnitude visible during August. Deneb, or Arided, at the top of the Northern Cross, and Altair, in Aquila, both lie in the path of the Milky Way. Vega, in the beautiful little constellation of Lyra, is now just east of the zenith and the equally brilliant Arcturus is far over in the west. The great red super-giant Antares with a diameter of four hundred million miles is now in the southwest, in Scorpio.

Saturn is now the only planet that can be seen to advantage in the evening sky. It is in Sagittarius as a brilliant yellowish star of the first magnitude just above the bowl of the little Milk Dipper. Venus is still in the morning sky but too close to the sun for observation this month. Mars is in Virgo but is almost too low in the west at sunset to be seen. Mercury also is unfavorably placed for observation. It reaches greatest elongation east on the eighth but is very close to the horizon at sunset. Jupiter is now a morning star in Cancer and on the fifteenth rises about one and a half hours before the sun.

THE BIG TREE THAT WOULDN'T FALL

IT HAS REFUSED TO SUCCUMB TO AX AND SAW

BY THOMAS WEST

THEY came, they sawed and sawed, but they did not conquer. The Bigtree still lifted its proud battle-scarred head to the sky in the Sierra Nevada and refused to bow to the will of man. And still it stands firmly upright in the heart of the great grove in Balch Park, California, although it was sawed completely through its base more than forty years ago.

Balch Park, a natural habitat of the *Sequoia gigantea,* was presented to Tulare County several years ago by Mr. and Mrs. A. C. Balch of Los Angeles. Its principal attraction is a stand of those wonderful trees representing all ages,—the surviving members of a once mighty forest. In 1889 a crew of woodsmen came to the site of Balch Park to get lumber. They selected, among others, one of the smaller members of a family of patriarchs which measured but twelve feet in diameter and towered only two hundred feet high. The top had been broken off, probably by lightning, when—no one knows, but possibly when the Romans were making history. With much labor and patience the woodsmen put in a good undercut and then with the aid of wedges sawed entirely through the trunk, but the tree refused to be conquered and still maintained its upright position of defiance. Heavier wedges were then resorted to and finally powder, in those days the last word in destructive force, but without success, for the tree resisted all efforts to bring it to earth.

U. S. FOREST SERVICE

CUT THROUGH BUT STANDING

Axes, saws, wedges and even powder could not budge this forest monarch nor increase its slight tilt

Many theories have been advanced as to the reason for this phenomenon, but none of them are conclusive. An explanation may be that the undercut, due to the length of the falling saws used, is slightly concave and the tree, being very symmetrical, nestled into the slight depression on an even balance. The tree is affected little by the storms and winds of winter as it stands in a well sheltered nook. No part of it is in contact with other trees or any other object to help retain its balance. It stands squarely on its own stump.

Many people visit the tree during the summer but each and every one may justly be a little nervous when within its shadows because "some time it will fall and why not now?" Old timers who have known and watched it for many years say it will stand for ages unless molested and their guess is as good as any as to when it will lay itself to rest on the bosom of Mother Earth whence it sprang centuries ago.

MINING MOUNTAIN AMERICA

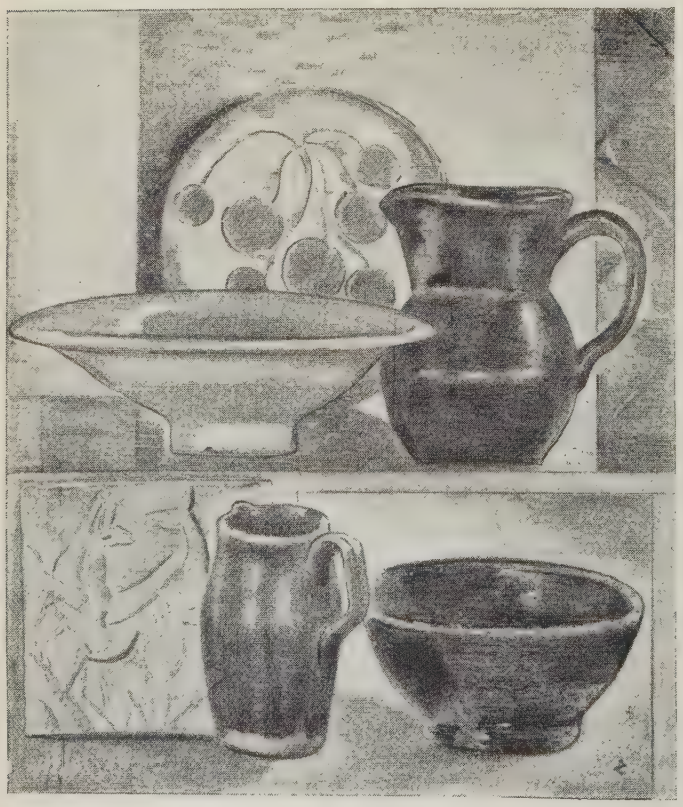
THE STORY OF A QUEST FOR NATIVE GOLD

BY JOHN GARLAND

RUGGED, beautiful in its quiet coves and forested peaks, the Blue Ridge sprawls lazily from Pennsylvania to Georgia. In its fastnesses dwell some four million souls, their daily rounds of unremitting toil little leavened by the tides of civilization that beat against their foothills. But poor, untutored as they are, they possess, locked in their memories and their heritage, the only folkways and arts that can be described as purely American.

A NATIVE WORKER PLANNED THIS

Reminiscent of the work of early settlers is this formal floral design



MOUNTAIN AMERICA AT THE POTTER'S WHEEL

The simplicity, flow of line and feeling for color exhibited by hill workers reveal the possibilities of their development

They are the children of craftsmen, these mountaineers. Their pioneer fathers and mothers wove garments of homespun and rugs of beautiful patterns, inspired by the Nature around them. At their tiny forges, they created, out of the leisure and patience pastoral life gave, the beautiful wrought-iron objects so desired by antique collectors today. Their workshops produced furniture, much of it crude, but some of it so delightful in design that furniture manufacturers are now vying with each other to distribute copies.

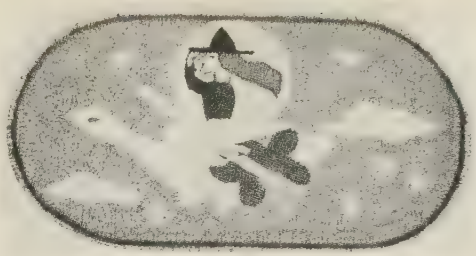
No wonder these progenitors of the hill-folk were able to create in new moulds the world had never seen. Nature is always creative, and these people lived so close to her that they were almost an integral part. They carried in their brains and blood that outdoor freshness and spirit which is dimmed in the city; the vistas from their peaks inspired new vistas in their minds.

Now, however, these people are much too poor and too burdened with the task of trying to make wretched farms produce goods for which there is little market to follow the ways of their fathers. This mechanical age, moreover, in which machines grind forth standardized products in standardized designs to be used by standardized people, offers small market for hand work. So the crafts are disappearing in the endless monotony of every day. The desire and power to create are being dulled on the rocks of grim reality.

Spurred by the realization that something precious is passing with the arts of the mountaineers, and that technological unemployment is driving an entire class back to farms that are foredoomed to failure, artists and sociologists have combined to make it possible for native workmen to return to the cherished crafts of other days. Many experiments have been tried, notably those of Berea College and the Fireside Industries at Berea, Kentucky, the Shenandoah Community Workers, now the Forest Community Foundation, at Bird Haven, Virginia, and the Lincoln Memorial University at Harrogate, Tennessee. In each of these, the method has been to supply the workmen with materials, direct their labor and market the products. And while the sphere of influence of these schools is, as yet, small, they are performing a labor of love deserving the thanks of America.

An experiment that goes farther than the others, however, is the School for the New Age, at Saluda, North Carolina. Instead of refreshing the memory of the mountaineers regarding their ancestors' designs, or to bring out the so-called "native" art, it is developing a new art, inspiration from which is

born in the natural surroundings. Staking its entire program on the conviction that locked in the souls of the hill people is enough fuel to feed a blaze which will be a beacon light in American art, it is fanning this flame by demanding original designs and making every effort to show them to the world. Further, it is attempting to interest factories to purchase designs and products in mass quantities, to the end that the artists will find a livelihood in their work and people of moderate means will be able to purchase creations far superior to those on the market today. In short, this school is endeavoring to mine mountain America and scatter widespread its hidden gold.



MOTHER GOOSE ON A BROOMSTICK
An original design for a rug which the School for the New Age has developed

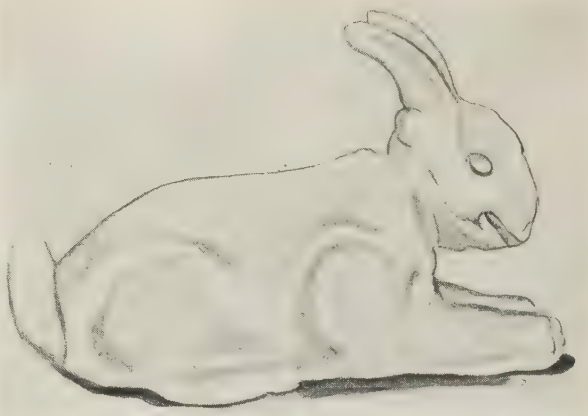
Mr. and Mrs. Zoltan Hecht, artists both, are the founders of the school, which began in 1924 with pottery classes in which both teacher and pupil sought to experiment with form, color, design and clays. In a short time they had gone far beyond the crude buttermilk churns and crocks which had once been their workmen's sole means of support (they sold at a profit of fifteen cents apiece). It is significant that the first and the best designs were based on simple scenes surrounding these natives, who live so close to the soil.

Somewhat later hooked rugs were tried, and from the first they were successful. Raw materials and patterns were supplied to the workers; they made the rugs in their homes, and the School sold the products. The very earliest attempts outsold other rugs, of stamped design and inartistic coloring, in the ratio of six to one.

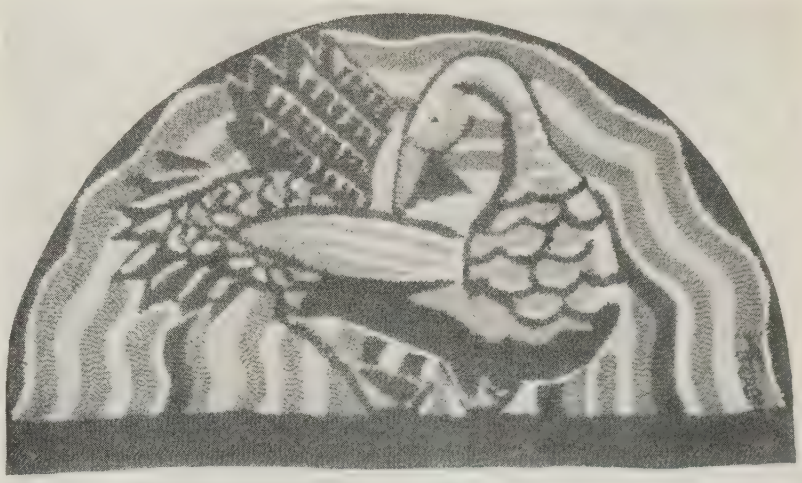
So expert did these volunteer workers become that at a New York exhibition in 1928, their rugs drew applause both from artists and business men. Yet they had been prepared for the exhibit in the dead of winter, at home, with letters as the only instructions for the working out of the most intricate of modernistic designs! One big carpet manufacturer was so enthusiastic as to desire to use the entire metropolitan output, but lost interest entirely when he learned that only about $75,000 worth could be produced yearly. He wanted to deal in half-million dollar lots, and was not willing to wait until four or five units like the one at Saluda could be developed to fill the demand.

The School for the New Age has undertaken an expansion program to include the possibility of such additional units, as well as the development of other of the native arts like furniture- and toy-making and work in iron and printed fabrics. It is being assisted in this program by other well-known artists and professionals, among them Warren Wheelock of New York, and Harriet M. Berry of the North Carolina Department of Agriculture. Yet these individual workers need a wider help. They need the help of sheep-growers to furnish wool for the rugs on short-time credit; of chambers of commerce to advertise the School and its products; of factories, to discard their inartistic, overworked designs for these fresh from Nature and from the heart of native America, and of the general public.

There is gold in these Blue Ridge Mountains. Gold produced by infinite care and skillful hands and minds that are willing to take time to do a task well. But each year the ore in which it lies becomes less accessible, case-hardened by poverty and the brutal impact of the competing machine. The Saluda School is mining that wealth, but without help, it is but placer-mining; the entire country must assist if the main lead is to be touched.



THE RABBIT AT REST
A nine-year-old girl moulded this figure, which shows a very definite promise



A DESIGN BY HENRY VARNUM POOR
This interesting and unusually patterned hooked rug was reproduced by a School for the New Age worker for the New York exhibition

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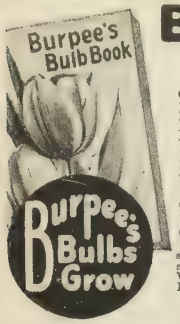

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PLANTING THE GARDEN, MONTH BY MONTH

By Romaine B. Ware

August is inclined to be rather a lazy month in our garden activities. With many of us the seeming boundless enthusiasm of spring is about petered out. We may blame it on the hot weather or mosquitoes but nevertheless our gardens suffer. At least we can not say there is nothing to do in the garden at this time. There are always the usual tasks, weeding, cultivating, watering or mulching, spraying and dusting. If we neglect these things the next few months will surely expose our faithlessness. Few gardeners, however, consider August a planting month and still there are several quite important types of material that should be planted now.

Every gardener, every home owner wants evergreens, at least a few, around the house or garden and practically all authorities agree that August and September are the safest months of the year to move them. Top growth with most evergreens is about complete for this year but root growth continues on through the fall. This is an ideal situation for moving and means that material properly planted now will be fairly well established by spring.

The most important precaution with evergreens is not to expose their roots to the air and not to allow them to dry out. For this reason they are invariably moved with a ball of soil, placed in their new location in a hole large enough properly to hold this ball and the soil firmly placed around them. Watered thoroughly at planting time and regularly thereafter with occasional spraying of the foliage with water if the weather is extremely hot, they should quickly take hold and appear as if they had always been there. Evergreens need no manure in average soils but nearly all kinds insist upon good drainage.

The Madonna lily has long been a favorite with gardeners but many have not had success with it and this may be due to the fact that it has not been set out at the right time. Most growers now advise August or even July planting for this lily. American grown bulbs are available by this time. The Madonna lily produces roots from the base only and should be planted very shallow, with only an inch or so of soil covering it. Turn slightly on its side and unless your soil is quite light surround the bulb with a pocket of coarse sand to insure perfect drainage. Plant them in groups or clumps rather than rows or isolated specimens. They are often placed along with delphinium, the light blue belladonna type and few combinations could be more delightful.

This is the best planting time for narcissus, and, as with many other bulbs, the fact that American grown stocks are now available makes it wise to take advantage of it and get our bulbs in early. Not only will the bulbs produce better blooms next spring but they will establish themselves more thoroughly and be better in future years. Narcissus should be planted much more generally than they have been and now that prices have come down somewhat we can take advantage of them. Several kinds should be used including the large trumpet varieties, and the delightful leedsii, barii and incomparabilis types.

Among hardy perennials, phlox, iris and oriental poppies may be planted or transplanted at this time. Iris and phlox should be dug, divided and reset every third year. With each of them the oldest parts of the roots are practically worthless and only the outer, young growths should be saved. With phlox, the stems should be cut off about three inches from the soil and the clump, after digging and shaking off a part of the soil may be broken, cut or pulled apart. Careful inspection will show you the new buds developing which will produce next year's flowers. Every stem will make a plant but if you make the division too small the bloom will be scanty next year.

The next six weeks are ideal to prepare for any new lawn you may be starting. Level the surface off carefully, filling all the hollows and removing all the humps. If the top soil is not of good quality, good soil should be hauled in and spread evenly over the surface. A layer two to four inches deep is sufficient. Should the original soil be sand or loose gravel, you will make a better lawn by spreading first a shallow layer of clay soil. This will help the area to retain moisture. The clay with good soil on top will make a lawn that will not dry out as quickly as one made upon foundation of porous material.

Many garden tasks may be done at this time. Perennial seedlings should be transplanted before they become crowded. Planted six to eight inches apart in nursery rows they will be easy to care for and within another few weeks many of them will develop sufficiently to plant in their permanent places before cold weather sets in. Be sure they do not dry out because wilting at this time is a serious check from which they recover slowly if at all. In dry seasons you must not neglect to water thoroughly. Avoid a sprinkling, which by encouraging root growth at the surface, does more harm than good. If it is impossible to water, cultivate the surface regularly, maintaining a dust mulch that will consume moisture. If cultivation is not practical, mulch with lawn clippings or peat moss.

The use of liquid manure will frequently stimulate added growth just when it is needed. To prepare liquid manure, suspend a burlap sack containing, say a half bushel of barnyard manure, in a barrel of water. In a couple of days dip out some of the liquid and after diluting it with water to about the color of weak tea apply around the plants. If the soil is quite moist at the time it will penetrate better. Additional applications may be made at weekly intervals but too much stimulation will result in weak watery growth and flowers that do not keep well.

The "dog days" of August may not engender the garden urge as did the balmy days of spring but the honest-to-goodness garden fan will keep everlastingly at it.

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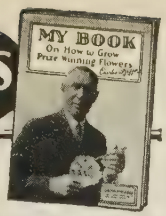

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IRIS POTPOURRI . . .

(Continued from page 114)

an "Iris Bowl". It is round and composed of terraces one below the other which terminate at the edge of a pool lined with blue tile. Thousands of iris in hundreds of varieties make this bowl, which is about one hundred feet in diameter, truly a beautiful picture. Another way to use irises is to plant them upon a steep bank where not only do they make an effective picture but their masses of roots will aid greatly in preventing erosion of the soil.

Irises have never proven practical as a commercial cutflower because of the extreme delicacy of the flower structure. Cutting in the home garden for house decoration is popular, however, as the blooms need not be packed. There is one type, the bulbous iris, that has been most satisfactory for cutting and is greatly in demand by the florists. English, Dutch and Spanish types are found in this group. Recent introductions of Dutch iris show an enormous improvement over older sorts and they will doubtless become increasingly popular. Besides their use for forcing and cutflowers they do well in the garden, except in those extreme climates where protection is necessary.

The iris has been making history for the past several decades and we are still far from the end of the story. Today there are hundreds of amateur and professional hybridizers working intensively to produce better plants, to surpass the near perfection of the present. Even better things in the future may be expected. So fortunate is he who makes iris his garden hobby and takes advantage of these masterpieces of Nature's —and man's—art. For him the end will never be.

Arduous Wooing

In the spring a young ram's fancy . . . but the fancy works out rather strangely, in the experience of Maynard Barrows, Park Ranger, of Yellowstone National Park, writing in *Yellowstone Nature Notes*. Recently he saw three stately males grazing quietly along the Yellowstone River. They sauntered into an aspen grove and shortly their apparent lady love arose and began running in a circle through the trees. The rams were in close pursuit at once, and, as far as could be observed, trees made no difference in their progress. As they ran, they attempted to dampen each other's ardor by ramming each other with terrific impact, but the butting seemed hardly to diminish their speed. After about five minutes of this ritual, the four sheep ran over a small hill and peacefully began to graze again, their lovemaking apparently over for the moment.

Hiawatha National Forest

The 150th national forest has been created in the Upper Peninsula of Michigan as a result of presidential proclamation. It is named the Hiawatha National Forest, and will have an area of 270,071 acres. All but 90,000 acres are in private ownership, but will be acquired by the government as rapidly as possible. Headquarters for the forest will be Munising, Michigan.

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THE LOONS

AGAIN AND AGAIN THEY CAME TO THE LAKE SHORE—IN VAIN

BY P. B. PEABODY

TWO EGGS—ONE THAT WAS AWASH
And the path worn by the loon's breast, with claw-marks on each side

On a tiny island in a Wisconsin lake, a pair of loons have nested for years. Their woodlands have yielded to pastures—and silos—and great red barns; yet they have nested on. The legend goes that they have never reared any young.

In late May, one year, I found them, both together, always two feet apart as they swam. Diving, they came up four feet apart, always together, always serene, always watching.

Later, I saw the male alone. That meant a nest. On the south shore I found it, five feet up from the water, at the end of a broad path through the rushes. There were two eggs. The rough nest and the path were two years old.

Long weeks went by. The eggs did not hatch. One day I shook them: liquid—"dead." They were taken away, that the loon might nest again. Vain hope! Yet they stayed the summer through. Next May I came again. There on the lake I found the loons—together—unafraid—yet always watching.

Again, quite as before, the days and the weeks came and went, yet the mother loon still sat upon her eggs. Her new nest was on the north shore, ten feet from water. It consisted of a rough root, a few long blades of grass.

On the night of the second of July, a sharp rain fell, obliterating all loon marks. Next morning I found a broad trough, plowed by the loon's breast, with rows of claw-marks on either side (for loons cannot walk). The larger, olive-green, brown-spotted egg was awash, twelve feet away; the unmarked one, sand-covered, had been rolled half-way to the water. What had the mother thought: "If I can get the eggs into the water, will they swim?"

BEFORE THE STORM CAME
The two eggs on the crude nest a few feet from the water's edge

The loons were gone. But they came back. Again and again I heard, or saw, them. As they winnowed by, ruddered by long legs, propelled at high speed by long narrow wings, there would burst out that life-some shriek—"Ou—ou—REEH—Re ah, re ah—re ah—REEH!" What sheer joy of life! No young to feed, no summer task—only to hurtle from the sister lake, across the tree-fringe, their vibrant blood-tingling laughter.

Many of us have known such a place—a lake where for ages a pair of lovers have made their home, and have sent their young forth to people other lakes. And who shall say what value they have lent to their little stretch of silver water? For there is nothing that quite equals the cry of the loon, clear ringing on the wild gusts that come driving just ahead of the storm. When the loons no longer come we shall miss half the spirit of the wilderness, and shall mourn as for the passing of a friend.

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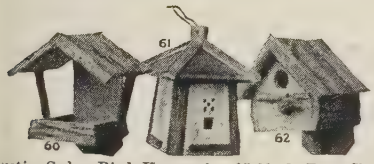

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HAVE YOU ANY PET PROBLEMS?

Many of the articles about pets in Nature magazine have stimulated inquiries as to where to purchase certain pets. Once we sold out most of the marmoset monkeys in the country, and another time we started a run on guppies. If you need advice on a reputable kennel from which to buy a dog; on the source of exotic pets or other pet information just write to the Pet Department of Nature Magazine.

Name It Yourself

Would you call it a Terrible Turk or a Tousled Pirate or a trick tree? The face, such as it is, is formed by natural markings on a birch tree in the South Mountain Reservation near South Orange, N. J., and was sent to Nature Magazine by E. H. Wendell. The black "fez" above the glaring eyes adds to the illusion of a human countenance.

Brookline Bird Club

The ever-active Brookline Bird Club, headed by L. Raymond Talbot, is planning a series of interesting bird walks for this spring and summer to points near the Massachusetts town. Every Saturday afternoon a group will travel to some of the quiet glades around Boston (and there still are some) to study and observe. The Club, besides its concentration on birds, is a strong conservation unit, and its bulletin contains stirring editorials against persecution of all forms of wild life. Its other officers are: Vice-president, Edith E. Torrey; recording secretary, Grace M. Snow; corresponding secretary, Anne Stevens; and treasurer, Irving P. Gammon, Jr.

Kaibab Deer Studied

Kaibab National Forest, Arizona, where several causes, including the killing of predatory animals, have resulted in an increase of the deer population beyond the food supply, was made the object, during June, of a special study by the Forest Service, with the cooperation of several naturalist and outdoor life organizations. The National Association of Audubon Societies, the Campfire Club of America, the Izaak Walton League, the American Bison Society and the American Society of Mammalogists, among others, took part in the survey. Food conditions, the relation of predatory animals to the deer, hunting and other related matters were investigated.

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Man's Beginnings

Ever since we first listened, nearly a decade ago, to that great advocate of the freedom of silver and the slavery of scientific thought, William Jennings Bryan, as he railed against the theory of human evolution, and repeatedly—and erroneously—declared that Darwin's *Origin of the Species* proclaimed the descent of man from monkeys, we have been waiting with increasing impatience for a book like *Up from the Ape,* by Earnest A. Hooton, recently issued under the Macmillan imprint. Few theories, not excluding Einstein's, have been more talked about and less understood. Its high priests have so garbed it in scientific unpronounceables and so expounded it by means of labyrinths of logic that it is little wonder that thousands fervently fear it and other thousands, equally ignorant, worship it as the key to life. One has only to read the account of the Scopes (Tennessee) trial to realize how befogged and beclouded have been—and are—the high-points of anthropological learning in the minds of men.

Professor Hooton's book, an accurate, yet popular presentation of the main facts of man's development, is like a radio beam cutting through the mists. As he says in his preface, "I have simply typed out the stuff which I deliver each year to a class of Harvard students, most of whom have had no previous instruction in the subject;" and we do not feel it a libel on Harvard students to say that even the most untrained of laymen will have no difficulty in understanding the book, so clearly, humanly and interestingly is it written. He has grouped his material into chapters dealing with man's relations, the primate life cycle, the individual life cycle, man's fossil ancestors and the human contemporary races, and makes each a complete unit which may be perused with profit by itself. His style is limpid, light and at times highly humorous, utterly in keeping with his philosophy of scientific writing. In his foreword he explains his style: "If the tone of this book seems at times to belie my Christian name, it is not because I take my subject lightly, but rather because of a conviction that science need not be clothed in sackcloth and ashes. One ought not be cheaply flippant in describing Nature's marvels, but he need not always deport himself as if he were in church."

Professor Hooton has contented himself largely with an exposition of the principal theories and discoveries of others, and only occasionally brings in his own large contribution to the subject. This permits the work to be used as a reference as well as an exposition to be digested as a whole.

Up from the Ape is another step in the liberalization and democratization of knowledge. It should smooth out a considerable stretch of the rough and rocky trail many are trying to climb up Parnassus. But best of all, it should terminate abruptly thousands of fierce arguments over evolution between proponents and opponents equally ignorant as to what it is all about. And the very next time we are assailed on the subject, we will blandly refer the arguer to *Up from the Ape* for a true picture of the problem. Think of the hours it will save! The book is priced at $5. P.F.H.

NATURE IN PRINT

Know Your Trees

A helpful little booklet for the tree student has been prepared by Mary Franklin Barrett under the title of *A Field Key.* As its name suggests, it keys the leading characteristics of the leaves of most of the wild and cultivated hardy trees of northeastern United States and Canada, and by following the key numbers through the index one may find the names of the trees themselves. A little practice makes it possible to identify an unknown species much more quickly than by use of most textbooks. The booklet is priced at $.35 and may be obtained from Miss Barrett at 64 Park Avenue, Bloomfield, New Jersey.

Working Semi-Precious Stones

A practical guidebook for those who desire to cut and polish semi-precious stones has been prepared by J. H. Howard and issued by *Rocks and Minerals* for $1.00. The booklet is published in Peekskill, N. Y.

Dogs at the Pole

"Dick" Byrd has been far too unstinting in his praise of those factors contributing to his success at the South Pole to fail to tell the world about his famous dogs, but it remained for John S. O'Brien to give the intimate details of one of the exploits of these dogs on the hardest dog-sled trips in history. This was a 1,600-mile trek across crevasse, glacier snow and pressure ridge—800 miles due south of Byrd's camp and return—to survey the frozen land round the pole and to back up the plane that was to fly over the pole. Mr. O'Brien, head surveyor, went with the party, and describes the days and nights mushing through the wilderness of ice in simple, straightforward narrative. The camping, the care of the dogs, the blizzards and storms, the humorous incidents and the near-tragedies are woven into a modest human tale that will thrill every reader, especially the youthful ones. The book is titled *By Dog Sled for Byrd* and is priced by Thomas S. Rockwell Company, Chicago, the publishers, at $2.

For Teachers

From the presses of the F. A. Owen Company, Dansville, New York, have come two books interesting to teachers. *Supervision of Elementary Schools,* by F. Burke Fitzpatrick of State Teachers College, Virginia, deals with the functions of supervision, practices and standards, ranking teachers and pupils, visiting, manner of criticising teachers, and new types of examinations. The other book, *Founding the Republic,* by Ramon Coffman, is a simple, graphic account of the development of America with special emphasis on the individuals who made American history. It is priced at 72¢ list and 54¢ net, and is appropriate for grades 4B to 7.

Survey of Mosses

Part 2 of Volume III of a most elaborate and exhaustive work, the *Moss Flora of North America North of Mexico,* has just been issued by A. J. Grout, Ph. D. and a fellow of the American Association for the Advancement of Science. Dr. Grout's ambitious project includes a complete survey of all moss life, and will fill a gap hitherto lacking in scientific literature. It is especially valuable for students, libraries and colleges. The work is being published from Dr. Grout's address at 1 Vine Street, New Brighton, Staten Island, New York.

A Boys' Bird Club

Bird Clubs composed entirely of boys of secondary school age, though less rare than formerly, are still unusual, and when these boys issue as a part of their hobby an elaborate annual, illustrated with halftones and better written than a large proportion of the adult material on the same subject, their achievement deserves more mention than this magazine can afford to give. *The Heron,* the year-book of the Woodmere Academy Bird Club, Woodmere, N. Y., is one of the finest products of youthful interest in birds that have crossed this editorial desk. The club has been in existence about five years, has ten members, each of whom is an ardent bird-enthusiast, and in 1930 took a dozen or so long trips in addition to many scouting expeditions. Their observations are contained in the annual, and reveal not only keen knowledge of birds but unusual powers of setting down what they see in interesting fashion. They evidently have not neglected their English classes, so excellently have they written up their experiences. "The Bird Life of the Lido Flats", written by Benjamin C. Berliner as the lead article of the annual, would creditably grace a professional magazine. The other articles are equally well done. At the end of the book is a special list of birds of the Woodmere region that many ornithologists living in New York will like to have.

The work of this New York club is but further indication of the fact that boys and girls have the ability, during their adolescent years, to turn out work their elders can hardly surpass. They are editing newspapers in high schools and making them superior to college, or even some town and city, newspapers. They are mastering the radio in their teens, and during the War, formed the backbone of the flying service. If their interest in Nature can be captured, they will make contributions, as this club is doing, that the adult world will greedily absorb, and lay a basis for a greater spread of knowledge—and a better quality of scientific writing—in the future. May the Woodmere boys have continued success.

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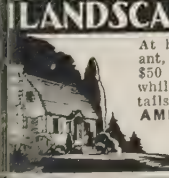

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Rhode Island Arbor Day

The fortieth annual observance of Arbor Day in Rhode Island was marked by elaborate programs in all the schools of the state on May 8 of this year. Inaugurating the ceremonies, State Commissioner of Education Walter E. Ranger said, in part: "The increasing use of woodlands for recreation has prompted 'Trees and Health' for special thought this year. The special contributions of this program show how more and more youth and age alike are turning to the parks and woodlands for their leisure time. We are learning to seek and to find health-giving recreation in the open and among the trees. The forest gives physical vigor and, in the magic communion of trees and things growing, gives health to the spirit." Many trees were planted by school children on this day in memory of George Washington, and the children were sent certificates by the American Tree Association as participators in the Bi-Centennial Tree-Planting Campaign.

Buffalo Healthy in Alaska

The herd of 23 buffalo transported from Montana to Alaska in 1928 has increased to 29, and is in excellent condition, according to reports from Jarvis Creek flats, where they were located this spring. The herd has now divided into two groups which feed separately in the daytime, but are believed to unite each night.

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Don't miss the interesting announcement on the bottom of page 131! Your advice is needed.

Why Save Our Wild Flowers?

Mildred Morgan, of Jones Valley High School, Birmingham, Alabama, won in the high school division of the contest for the best essays on "How and Why We Should Preserve Our Wild Flowers." The competition was among children of Jefferson County, Alabama, and for the George B. Ward cash awards. Miss Morgan, in her excellent plea for wayside blooms, said in part:

"Novelists and poets have given our Southland a beautiful name, 'The Land of Flowers.' One mentally visions woods filled with blooms, many colored and patterned, climbing and nestling; wide spreading loveliness everywhere.

"When one is expecting guests, the home is made beautiful. Why not preserve our wild flowers to make the woods beautiful for travelers? It invites the more refined people to make their homes in our midst. Lovers of beauty make citizens who are interested in the civic activities and the welfare of our children. Children from such homes make better students; they are prepared in a measure to take up the work.

"How many of us realize that the same rapacious spirit that destroyed the vast herds of bison on our Western plains, and exterminated many of our most beautiful birds, has seriously endangered our wild plant life, until many of the most desirable plants have actually disappeared from wild areas of our country? It is a pitiful tragedy here in our Southland because where formerly luxuriant display of laurel, rhododendron, holly, ground ivy and arbutus abounded, now many places there can be found only weedy and generally unattractive species. The blue bell, wild orchids, and many other species of rare grace and beauty are vanishing rapidly and will soon live only in memory unless active steps are taken to save them.

"Each Spring witnesses the descent of legions of thoughtless flower vandals who ravish the flora. These people in tearing away the flowers rob most plants of their only method of reproduction. These misguided hordes gather armfuls of rapidly wilting plants which become in a few hours unsightly, mute masses of wanton destruction of Nature's most precious gifts.

"Is it fair that we dissipate this great natural heritage, robbing posterity of the pleasures derived from our flowers which we now so fully enjoy? Why not accept this rich birthright in a guardian spirit, to be safeguarded and preserved for the enjoyment of those who come after us? Each generation should act as a trustee of the surrounding flora, executing its trust in such a manner the beauty of our native wild plant life may continue to prosper. Be an attorney for beauty rather than a destroyer of beauty! Refrain from gathering those flowers on other people's property. Do not pull up by the roots plants which would not be injured if the flowers were cut off with short stems. Obey the letter and whole spirit of the law respecting the flowers and trees growing.

"Wordsworth, who has gone down in posterity as the great lover of Nature, believed:

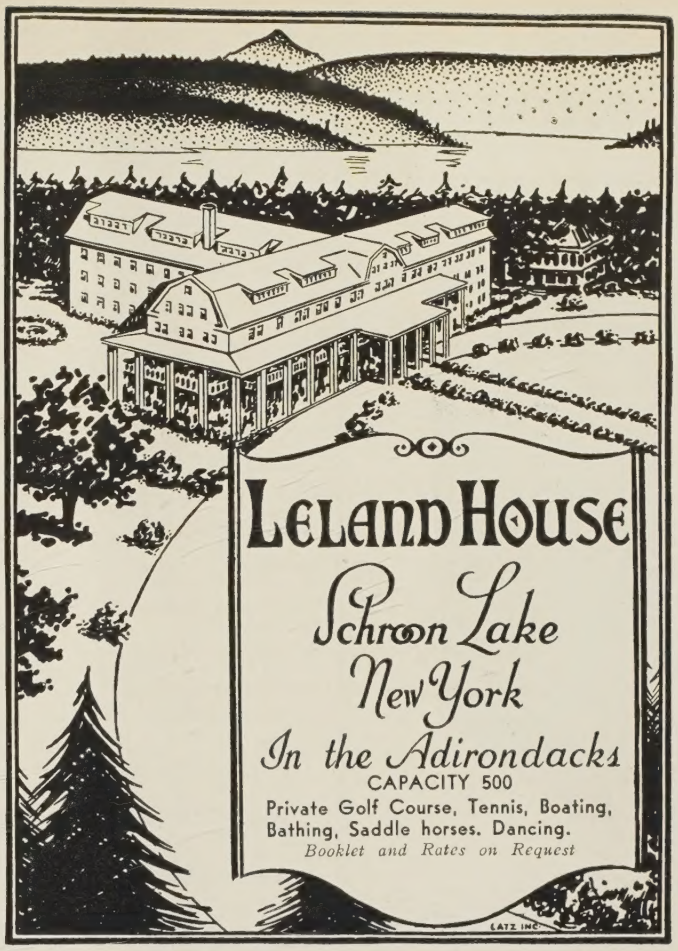
Through primrose tufts, in the green bower,
The periwinkle trailed wreaths;
And 'tis my faith, that every flower
Enjoys the air it breathes.

"And if all would adopt his beautiful faith then there would be no 'reason to lament what man has made of man.'"

BULL CREEK FLAT

The renowned Bull Creek and Dyerville orests, acclaimed by world travelers the upreme development of California's giant edwoods, and considered of the same naonal importance as Yosemite, Grand Canon and other unique natural wonders, are ssured of preservation as a part of Calirnia's State Park System. This is the anouncement of the California State Park ommission, which has reported through e Director of Natural Resources to Govnor James Rolph, Jr., that negotiations ith The Pacific Lumber Company, owner these Redwood groves, have reached a ccessful conclusion and that 10,000 acres, cluding the watersheds of Bull Creek, ecker Creek and Cabin Creek, as well as e North and South Dyerville Flats, will acquired. The acquisition of these Redoods culminates a campaign of more than n years conducted by the Save-the-Redoods League, and begun by its founders, r. John C. Merriam of the Carnegie Intution of Washington, Madison Grant New York, and Dr. Henry Fairfield sborn of the American Museum of Natul History. Under the terms of the State rk Bond Act, passed by the Legislature 1927, and ratified by the people of the ate, half of the total cost of the project to be borne by the State and half by the ve-the-Redwoods League. The saving of ese Redwoods was prominently featured the campaign for the State Park Bonds. The Save-the-Redwoods League has anunced that it has secured sufficient conbutions and pledges to match State Park nd funds for the acquisition of these nds. Many public-spirited individuals d organizations throughout the United ates have contributed. John D. Rockeller, Jr., by a gift of $1,000,000 and a edge of a second million to match prite gifts as received, made possible the ccess of the project. Organizations such The Garden Club of America, the Calirnia Federation of Women's Clubs and e Native Daughters of the Golden West ntributed substantial funds.

Not only the lands of The Pacific Lumr Company, but also holdings of other mber concerns and individuals have rently been purchased to round out a park ea which with the new acquisition will ach a total of over 13,000 acres, and will present a value of over $3,500,000. Toether with previously acquired park lands the Humboldt State Redwood Park, the al acreage preserved in this region is apoximately 16,000 acres. While there still main Redwood forest lands, particularly ng the Redwood Highway, which it is ped can ultimately be acquired, the units w assured of preservation represent the sential parts of what has for years been nsidered "the world's finest forest."



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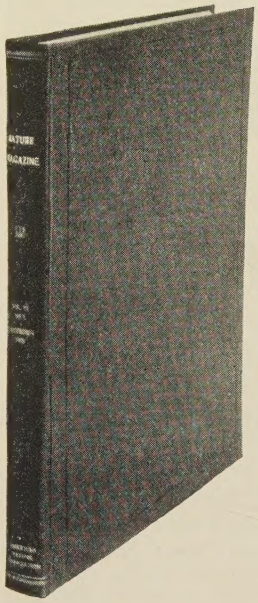

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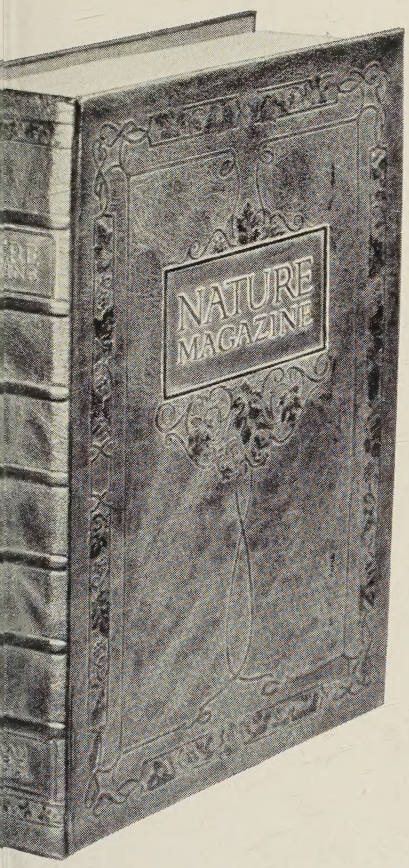

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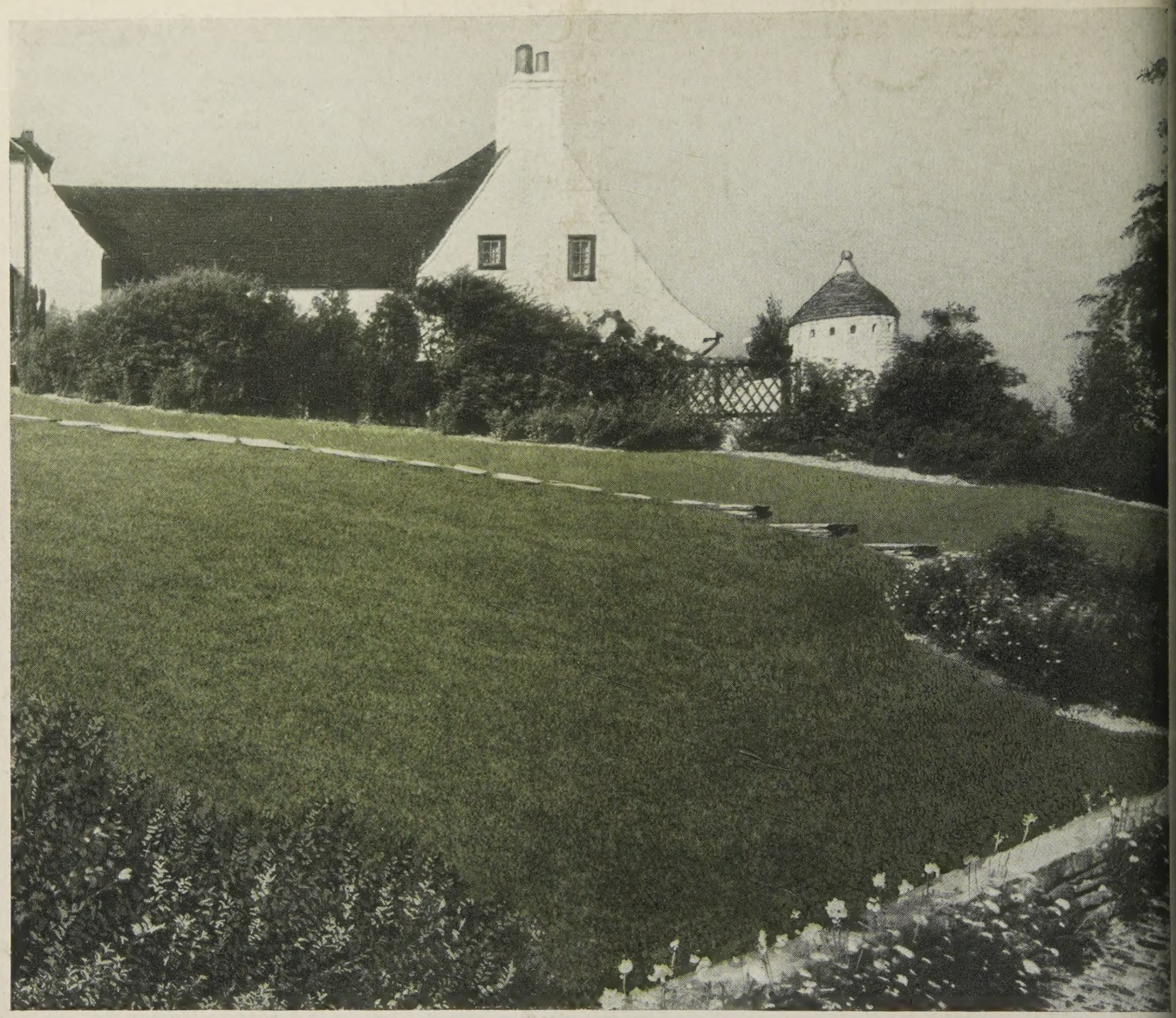

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